

AUFWIND

DAS MODELLSPORTMAGAZIN



**100
PAGES**

Highlight 'ASK-13R' from KB3Aero

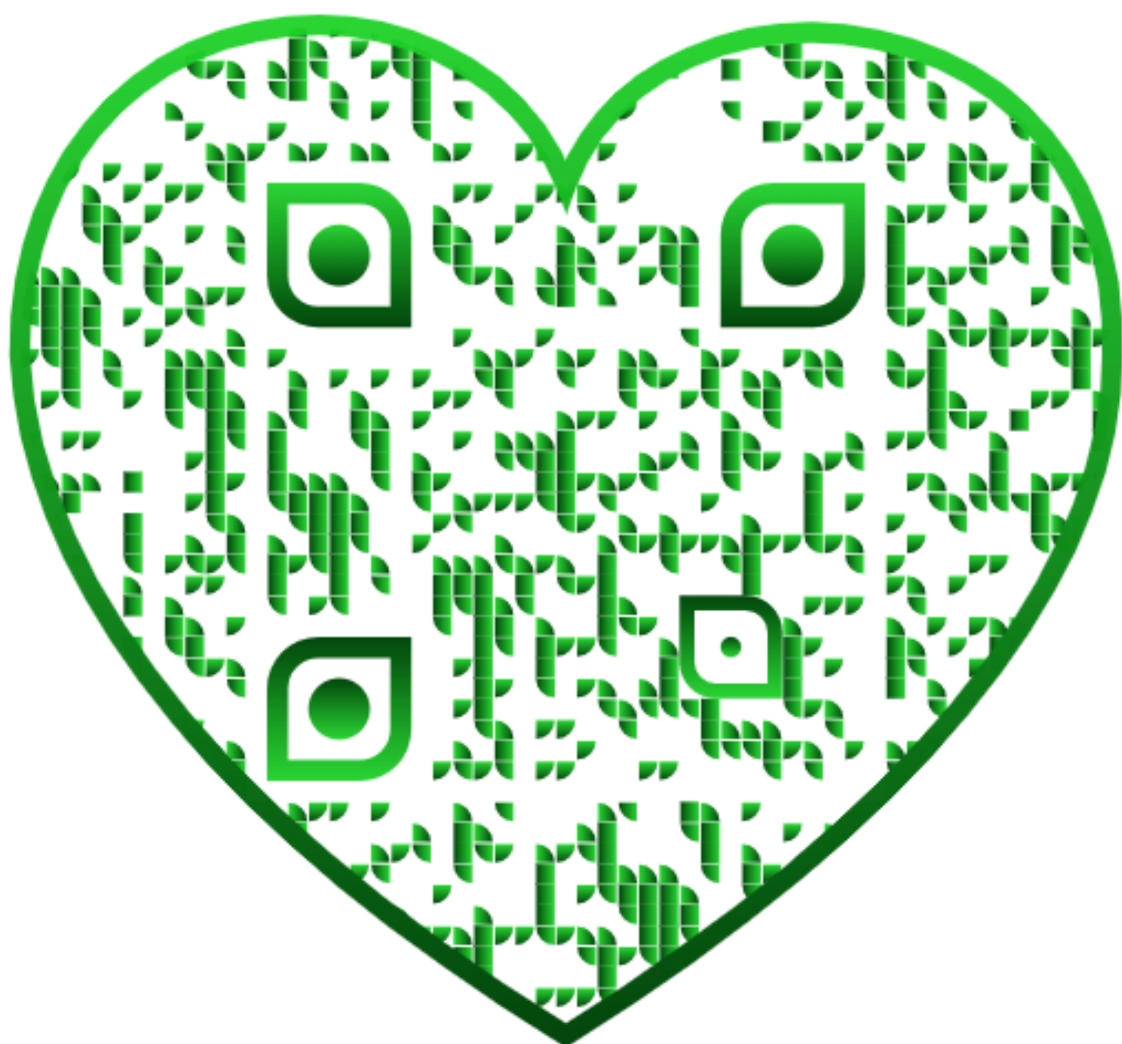


The all-rounder 'T-Max' from Competition Tools



► **models:** 'Avalanche Mini', Robbe • 'Duo Discus', Wildflug • 'Ikura GPS', Aer-O-Tec

► **report:** Flying Circus 2025 • GPS-Light Worldchampionship • Powerbox Systems



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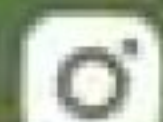




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news

I Large gliders

At the recent gliding exhibition, D-Power focused its presentation on the 'ASH-31', with a wingspan of 6.4 metres and a length of 2.2 metres. The full GRP model with numerous reinforcements has a four-part wing with four flaps. The spar consists of a solid carbon rod. An electric retractable landing gear and electric spoilers with a length of 44 centimetres are available as accessories. D-Power emphasises the high degree of prefabrication and impressive flight characteristics of the model. The weight is specified as 12 to 14 kilograms, and the wing loading is between 96.9 and 113 grams/square decimetre with a wing area of 123.87 square decimetres.

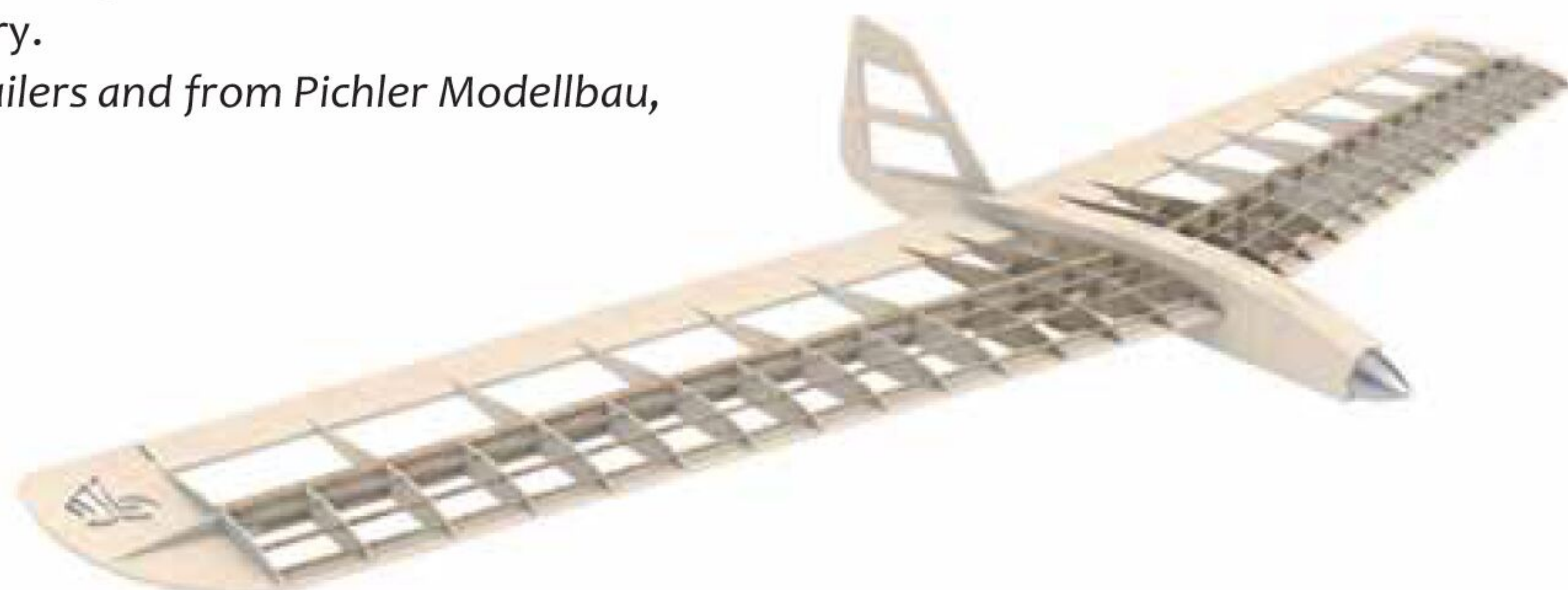
Price: 2,999 euros; available from specialist retailers, www.d-power-modellbau.com.



I Flying wing

With the 'Aurora', Pichler offers a sleek flying wing model in wooden construction from its own licensed production. The wingspan is 1,700 millimetres. The weight is stated as around 800 grams. The model is available as a laser-cut wooden kit. The flight characteristics are both docile and dynamic, and even strong winds have little effect on the model. Magnets are used to attach the wings. A drive set is available as an accessory.

Price: 135 euros; available from specialist retailers and from Pichler Modellbau, www.pichler.de.



I New landing gear

Tobcon presents newly developed FES landing gear in full carbon design. Their raised starting position allows the use of larger propellers for ground take-off. The 'Sky Lift 1' is designed for models from 1:3.5 scale and has a wheel size of 105 millimetres. The 'Sky Lift 2' is intended for models in scales from 1:3 to 1:2 and offers space for wheel sizes from 130 to 150 millimetres. Without manual intervention by the pilot, the landing gear can be raised up to 35 millimetres from its normal position. This take-off position is achieved by means of a specially developed mechanism and a 42 kg servo. This raises the nose of the fuselage by approximately 45 millimetres above its normal position. The servos for extending/retracting and changing the position, as well as the selected wheel, are included in the scope of delivery.

Prices: 349 euros ('Sky Lift 1'), 399 euros ('Sky Lift 2'); available from Tobcon, phone: +49-162/9691366, www.tobcon.de.



I 500 million

For over 20 years, the Ecalc.ch platform has been offering various tools for creating drive calculations and simulations. On 20 September, operator Markus Müller announced: "Ecalc.ch has surpassed the magic mark of 500,000,000 drive calculations! Over 200,000 setups are calculated daily, more than six million per month."

Ecalc.ch can be used to calculate and simulate electric drives for airplanes, multicopters, helicopters, impeller jets and even UAVs. It uses a motor database with over 15,000 components. Ecalc.ch is available in 19 languages.

www.ecalc.ch

I With V-tail

Modellbau Pollack now also offers the high-performance CFRP model 'NG2m' with a V-tail. This allows customers to choose between a four- or two-flap wing and the tail shape. The 'NG2m' is also available in many different colours and designs. The model has a wingspan of 1,999 millimetres, is equipped with a 7.1 per cent thin profile and has a kerb weight of 350 grams. In the electric version, an 'A2212' (1,400 kv) with a 3s LiPo with approx. 1,200 milliampere hours is recommended.

Price: from 750 euros; available from Modellbau Pollack, phone: +49-981/14224, www.modellbau-pollack.de.



I Wing servo

KST now offers the 'X15-1809A V8.0' in the popular 15 mm size, specially designed for installation in the wings of large gliders. It is one of the most powerful midi servos on the market and was developed for horizontal installation. The new servo delivers around 24 kilograms at 8.1 volts. The speed is specified as 0.07 seconds for 60 degrees at 8.4 volts. It weighs 45 grams, has a steel gearbox and is double ball-bearing mounted. The housing size is 35.5 x 15 x 36.5 millimetres.

Price: 89.90 euros, available from specialist retailers and from KST, www.kst-servo-shop.de.

I New servo

Powerbox Systems is now shipping its in-house servo, the 'HVC.45'. It was developed according to Powerbox specifications and offers state-of-the-art servo technology designed for maximum durability, highest precision and uncompromising quality. Two large capacitors in the servo prevent reverse currents and provide energy for the motor when current peaks have to be absorbed due to cable lengths. The 'HVC.45' not only works with the PWM standard, but also with the widely used 'S.BUS'. However, full functionality is achieved with the 'P²-BUS' system. This transmits telemetry data to the transmitter display in real time. The servo can also be adjusted via the transmitter. This includes, for example, the servo travel, current limitation and holding and start-up characteristics. The internal connector is equipped with a screw lock. The dimensions are specified as 40 x 20 x 38.8 millimetres and 94 grams in weight, with a torque of 45 kilograms.

Price: 179 euros, available from specialist retailers and from Powerbox, www.powerbox-systems.com.





I Glider

MK-Modelltechnik now also offers a drive and RC set for its own production of the realistic 'Mini Discus' glider. The RC upgrade set consists of rudder linkages, propeller, spinner and motor mount. The servo and drive set has three digital servos, each weighing 1.8 grams, a nano motor and a 6 A controller. The foam parts are manufactured at a partner plant in southern Germany, according to a company spokesperson, while other parts are manufactured in-house. The 'Mini Discus' is a small, aerobatic model that feels at home even on the smallest lawn.

Prices: 12.50 euros ('Mini Discus'); 25 euros (RC conversion kit), 60 euros (servo and drive set); available from MK-Modelltechnik, phone: +49-7021/9280702, www.mk-modelltechnik.com.

I Personnel

Andy Powell Sr. will be joining the British manufacturer Modern Vintage Models as a partner and Director. Over the last year, he has worked tirelessly in assisting the CEO Jorgen Pedersen with ideas, exuberance, and general support. Andy has a rich aeronautic background, has owned, run and managed his own manufacturing companies, has a RAF heritage where one of his jobs was to build static models in short order. "We are truly fortunate that Andy has agreed to join us and look forward to this next chapter in the evolution of MVM", Jorgen Pedersen underlines.

I Folding propellers

Leomotion presents a new series of folding propellers with its 'Dragonfly' propellers. Developed for maximum aerodynamics, these propeller blades offer optimum thrust with minimum energy consumption, according to reports. They are available in numerous sizes and are CNC-machined. Their lightweight design makes optimum use of engine power, the company emphasises. Currently available sizes are 8 x 5.5 inches, 8.5 x 6 inches, 9 x 6.5 inches and 10 x 7 inches.

Prices: from 9 Swiss francs; available from Leomotion, phone: +41-44/9500597, www.leomotion.com.



I Vintage

With the 'MVM Oldtimer' from its own production, British manufacturer Modern Vintage Models has a motorised model with a wingspan of 1,060 millimetres in its range. It is controlled by elevator and rudder as well as motor control. It is an excellent training aircraft that flies very well even in strong winds, the company emphasises. The wooden kit comes complete with fittings, covering material and wheels. A 2204/2205 outrunner motor with 2s LiPo is recommended for motorisation.

Price: 57.99 GBP; available from Modern Vintage Models, www.modernvintagemodels.co.uk.



I A classic

This 'Piper PA-18' from the D-Power range has an impressive wingspan of 1.7 metres. The model from manufacturer FMS weighs around 2.1 kilograms and offers excellent short take-off and STOL characteristics. The oversized balloon tyres and spring-loaded metal landing gear make take-offs and landings possible even in tall grass and on uneven terrain. A float set is also available as an option. Thanks to its bolted construction, the 'PA-18' is ready to fly in no time. The drive and six 17 g servos with metal gears are pre-installed and all linkages are pre-installed. The model is powered by a 35 mm motor with a 45 amp controller, 12 x 7.5 inch propeller and 4s LiPo with 2,700 milliampere hours. The battery is also included in the scope of delivery. The model is also equipped with navigation lights and landing lights.

Price: 369 euros; available from specialist retailers, www.d-power-modellbau.com.



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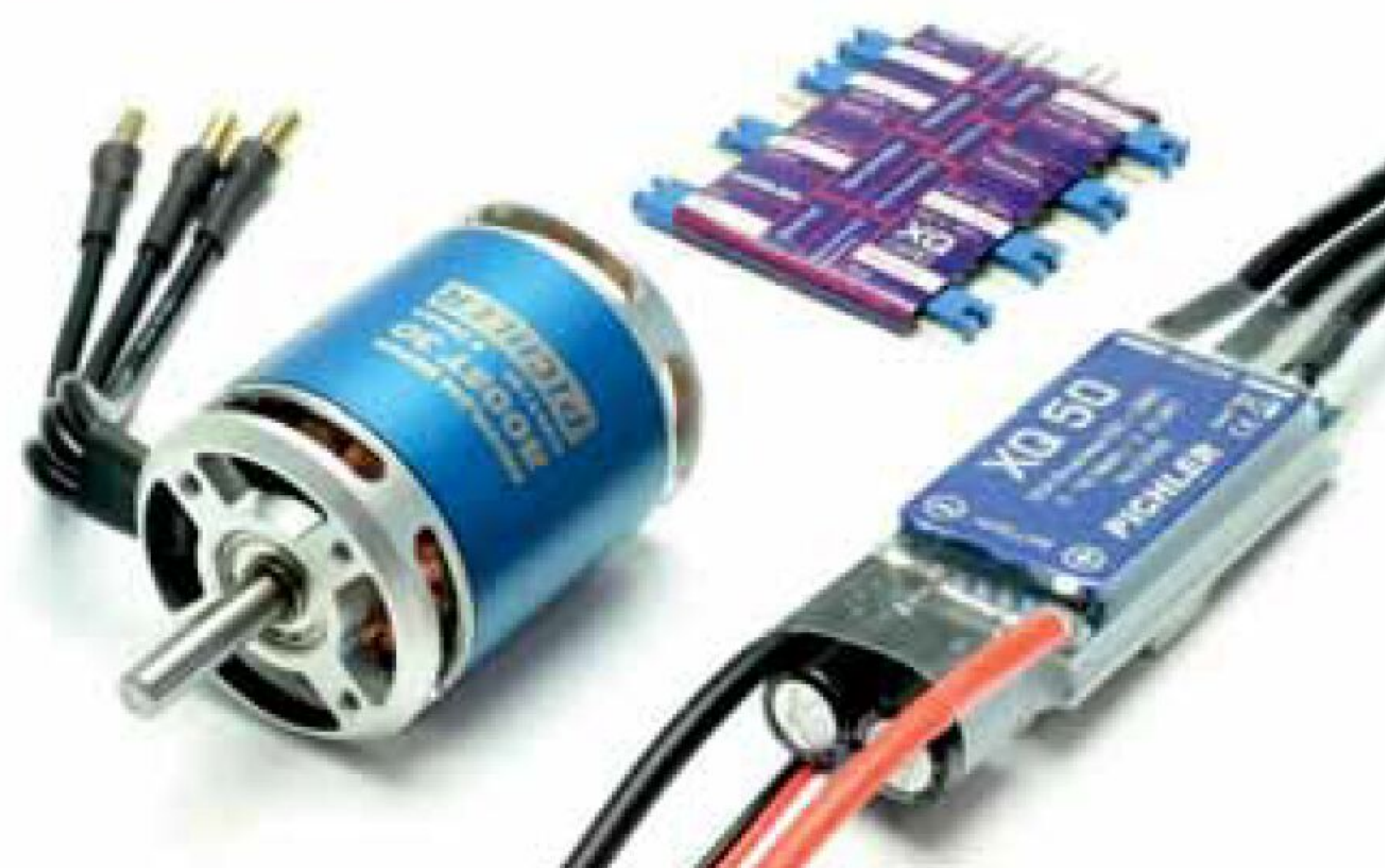
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FAIRS & EVENTS

THE CURRENT MODEL SPORTS SEASON IS COMING TO AN END

There will be a premiere at the Faszination Modellbau trade fair on Lake Constance, and the dates for most of next year's trade fairs and events have already been set.

MEETING POINT FRIEDRICHSHAFEN

Model airplanes will once again take centre stage at Faszination Modellbau from 31 October to 2 November in Friedrichshafen on Lake Constance. Thorsten Rechthaler, Aeronaut, reported at the end of last year's fair: "Faszination Modellbau is the highlight of the trade fair season for us. This cross-sector event covers all facets of model making." Nicolas Wetzel from D-Power emphasised: "Faszination Modellbau is one of the most attractive trade fairs in our scene, both for us as a company and for visitors."

Newcomers this year include Teil-Q (www.teil-q.de) with its range of innovative model stands and centre of gravity scales, and manufacturer Stich & Faden (www.stich-faden.net) with model rucksacks and transport bags. AUFWIND magazine will also be exhibiting in Hall A3, and editor-in-chief Philipp Gardemin is looking forward to seeing his readers and friends from Germany and abroad. Other exhibitors in the field of model airplanes include Aeronaut, Balsabar, CHA-Servo, Derkum, Horizon Hobby, Hotel Glocknerhof, Kavan, KST-Servo, Mahmoudi Modellsport, Pichler, SG-Modellbau and Unilight.

**Faszination
Modellbau**



Last year, around 46,000 visitors came to Friedrichshafen. In addition to model aircraft, the programme also includes model cars and ships, model railways and steam models, as well as numerous special topics. The highlight every year is the 'FMT Stars of the Year' air show at the neighbouring airport.

www.faszination-modellbau.de

TWO DAYS OF GLIDING

The next gliding fair in Schwabmünchen will take place on 10 and 11 July 2026 – for the first time over two days: Friday and Saturday. The reason for this is the desire of numerous exhibitors to no longer use Sunday as a trade fair day and to concentrate on the two days with the highest visitor numbers from now on.

www.segelflugmesse.de



F3J IN SWITZERLAND

Model gliding is firmly established in the Swiss competition landscape. Markus Schneuwly and his team have therefore worked hard to bring the 2026 F3J World Championships to their country. But the dream did not come true: "By September, only seven nations had registered for the 2026 F3J World Championships. We only needed one more to hold the World Championships. For us as organisers, this is not feasible. As we would now have had to sign the final contracts and incur costs for the site and hall with immediate effect, the financial risk was too great for us. For this reason, we had to cancel the FAI F3J World Championships 2026."

The cancellation of the World Championship does not affect the F3J Fribourg Trophy, which took place for the seventh time on 31 May and 1 June. Twenty-two participants took part, with Thomas Kübler (Switzerland) emerging as the winner, followed by Claus Scholz (Germany) and Tobias Lämmlein (Switzerland). The date for the 8th edition of the F3J Fribourg Trophy is not guaranteed: „With only 20 participants, the effort is too great,“ says Markus Schneuwly. He is planning something in the direction of F3L.

www.f3j.ch



Fairs at a glance

31 October - 2 November

Faszination Modellbau, Friedrichshafen, Germany

www.faszination-modellbau.de

16-19 April 2026

Intermodellbau, Dortmund, Germany

www.intermodellbau.de

22-25 April 2026

Aero, Friedrichshafen, Germany

www.aero-expo.de

24-26 April 2026

Prowing, Soest/Bad Sassendorf, Germany

www.prowing.de

19-21 June 2026

Weston Park Air Show, Shropshire, Great Britain

www.airshowinternational.co.uk

25-28 June 2026

Flying Circus, Fiss, Austria

www.flying-circus.de

10-11 July 2026

Gliding Fair, Schwabmünchen, Germany

www.segelflugmesse.de

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RRP **1.099,- €**

mz-18
9 Kanäle

RRP **299,- €**

mz-12 PRO
12 Kanäle

RRP **199,- €**

Graupner



Cesare Sarti has fulfilled a dream with the realisation of the 'ASK-13R' project.

IT IS (NOT) A CLASSIC

models

THE 'ASK-13R' PROJECT FROM ITALY – PART 1

At the 2023 Segelflugmesse in Germany, Alberto Ferraroni, Michele Mancini and Cesare Sarti from the Bologna region presented the concept of the 'ASK-13R'. Production has now started and Philipp Gardemin has built one of the first series models.

I have always liked the special features of glider models. This also applies to the 'ASK-13R' with its striking appearance and forward-swept wings. Wherever the model is shown, it is a topic of conversation: fans of traditional gliding in particular usually cannot understand why an 'ASK-13' with four-flap wings and modern profiling is being built. It was never intended to be a vintage model! Rather, the Italian 'ASK-13R' is a Volkswagen Beetle with a Porsche engine.

In July 2023, the three Italians Alberto Ferraroni, Michele Mancini and Cesare Sarti explained to me the basic requirements of their aerodynamic project based on the classic 'ASK-13' glider: "The 1:4 scale model with a wingspan of four metres should be extremely efficient at low to medium

flight speeds in order to optimally replicate the true-to-life glider. We also wanted to create a model that offers the pilot versatility and is not overwhelmed by classic aerobatic manoeuvres and cross-country flight tasks," emphasised Cesare Sarti at the time. According to him, stall should also be controlled, progressive and occur in predefined specific zones of the wings during slow flight. The concept of the model was presented in detail in AUFWIND 1/2024 and already met with great interest. At the Swiss expert meeting in Hünenberg in February 2024, I took another closer look at the project... but then lost sight of it.

For a year, things were pretty quiet around the likeable Italians and their newly founded company KB3Aero. During this time, Cesare Sarti and his team developed and realised the series production of the model in cooperation with German manufacturer Tomahawk. To this day, he emphasises the great support he received from company founder Thomas Höchstmann and his

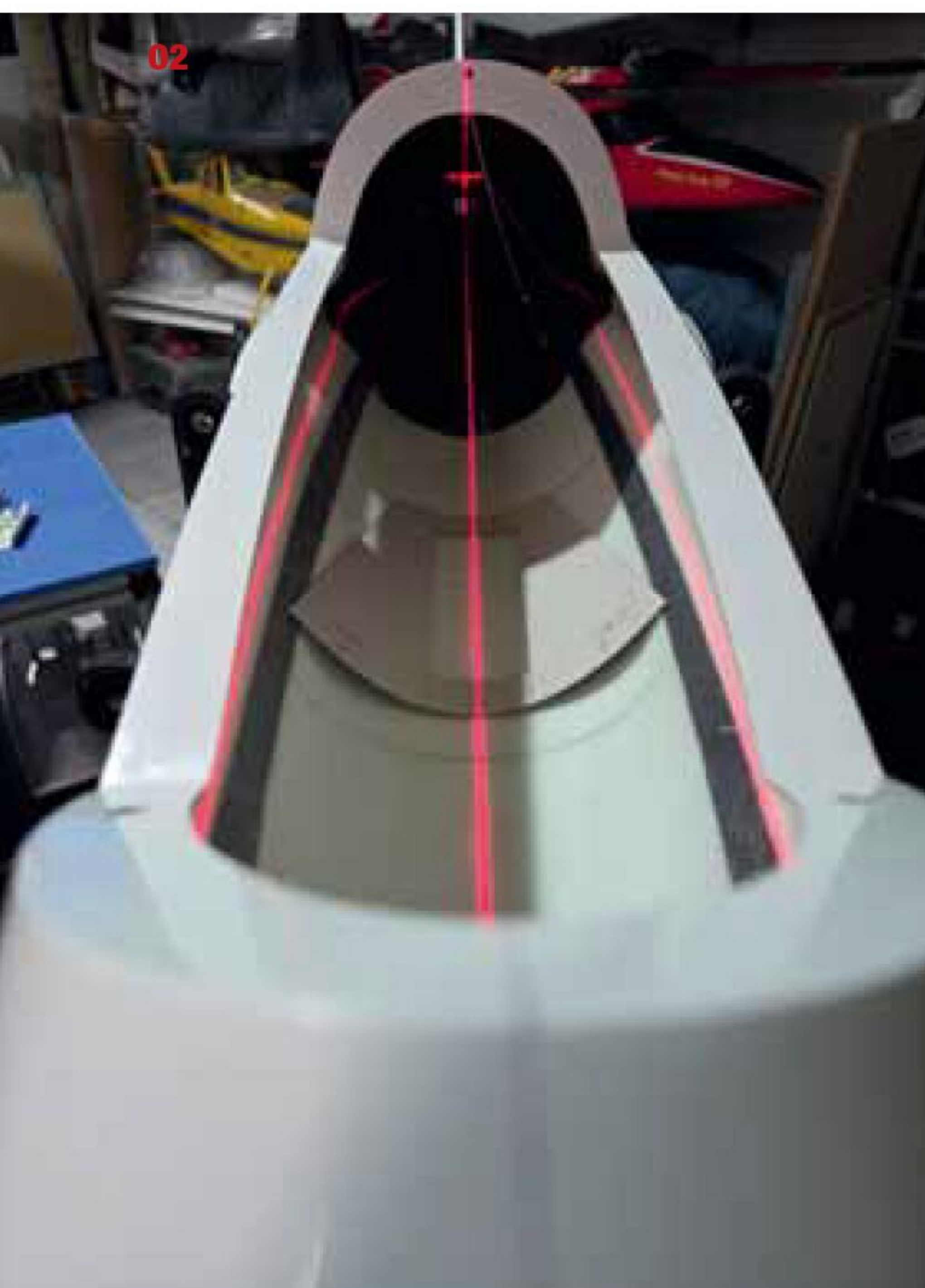
team, without whom the whole project would never have made it beyond the drawing board.

In February 2025, Cesare was finally able to proudly announce at the Swiss expert meeting that the first series models would be ready for delivery a few months later. This rekindled my interest. In addition, the 1:4 scale and aerodynamic concept promised high suitability for GPS triangle flying in the 'AUFWIND Scale 1:3.5' class – not to mention the fascinating appearance of the legendary training two-seater from my youth. That same evening, I placed an order for my own 'ASK-13R' with Cesare Sarti.

Just three months later, I drove to Tomahawk's headquarters in Bavaria. Cesare Sarti had also travelled from Italy especially to receive the first delivery of his model. Together, we examined my model. We were impressed by the quality and construction of the models. I had deliberately chosen a model with a white upper surface. I had only chosen anthracite for the undersides

Cesare Sarti's model was impressively flown at the gliding fair in Schwabmünchen and at the Glider Expo (picture) in Hülben. His wife Stefania strongly supports KB3Aero.





of the wings and the tailplane. The only extra I had ordered was the pre-soldered wiring harness. KB3Aero also offers various colour schemes for the model at an additional cost, as well as glued-in servo frames, built-in KST servos and much more.

No sooner had I arrived home with the beautiful model than I continued shopping: at the German specialist Wemo-Einziehfahrwerke, I found everything I needed to expand the fuselage. Since I wanted to equip the 'ASK-13R' with an FES drive, I added the FES 'Slim-Line 1:4' landing gear with a 90 mm wheel to my shopping basket. A special feature of the landing gear is the rear-mounted 10 mm servo from Chocomotion, which makes the design of the landing gear extremely slim. Wemo delivers the landing gear fully assembled and ready for immediate installation. Furthermore, after my good experience with my 'Discus', I again opted for the adjustable servo holder for the rudder servo. Here, the tension of the cable linkages can be easily adjusted with an Allen screw. New to me was the innovative tow coupling from Wemo – more on that later.

I started with the retractable landing gear. The position of the wheel axle should normally be under the leading edge so that the model does not tip over on its nose during take-off and landing. However, due to the strong forward sweep of the wings, the centre of gravity is no longer at the first third of the wing depth, but significantly further forward. So, I moved the position of the wheel axle 60 millimetres forward of the leading edge. This is exactly the distance of the centre of gravity in front of the first third of the root rib. I also ordered the plywood frames from Wemo. They are rectangular when delivered and have to be adapted to the fuselage floor. The cut-outs for insertion and the screw connections for the landing gear are already finished by Wemo. I marked the position of the frames in the fuselage and made templates out of drawing cardboard to obtain the shape of the frames. Sawing out the frames was fast and easy, and I was able to finally fit the landing gear with the frames screwed on into the fuselage. I also prepared the mounting of the servo holder for the rudder on the back of the rear frame.

01 The Wemo retractable landing gear described above at a glance. I am particularly impressed by the new tow coupling (bottom right).

02 | 03 A laser was used to align the retractable landing gear. The plywood frames for the retractable landing gear were cut to size using cardboard templates.

04 The narrow cut-out in the fuselage floor is closed by a one-piece landing gear door.

05 The tow coupling from Wemo. Thanks to the flexible Bowden cable, the servo could also be positioned away from the straight line.

06 | 07 The tailplane is attached with three sturdy screws. I glued the servo connection on both sides.



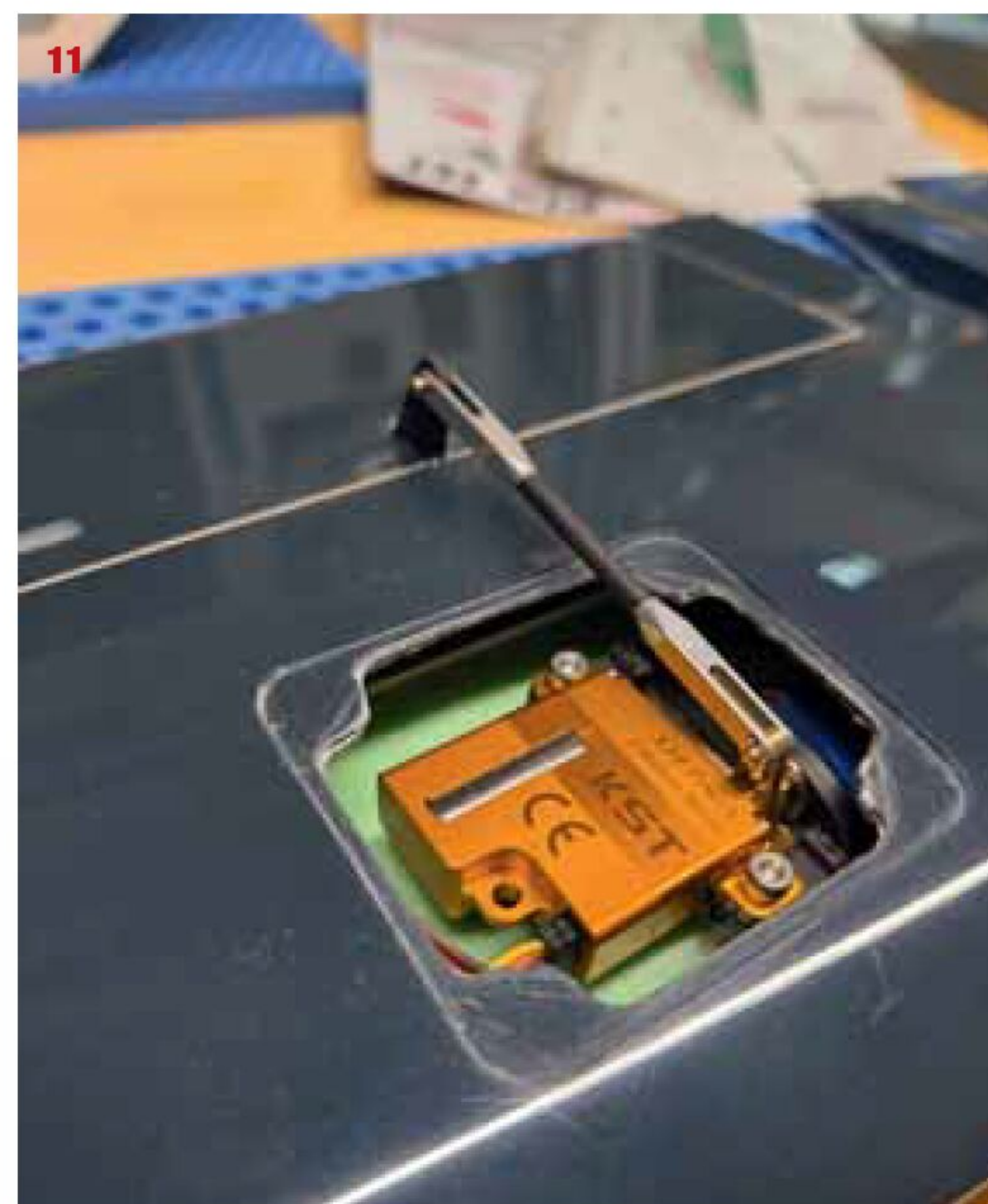
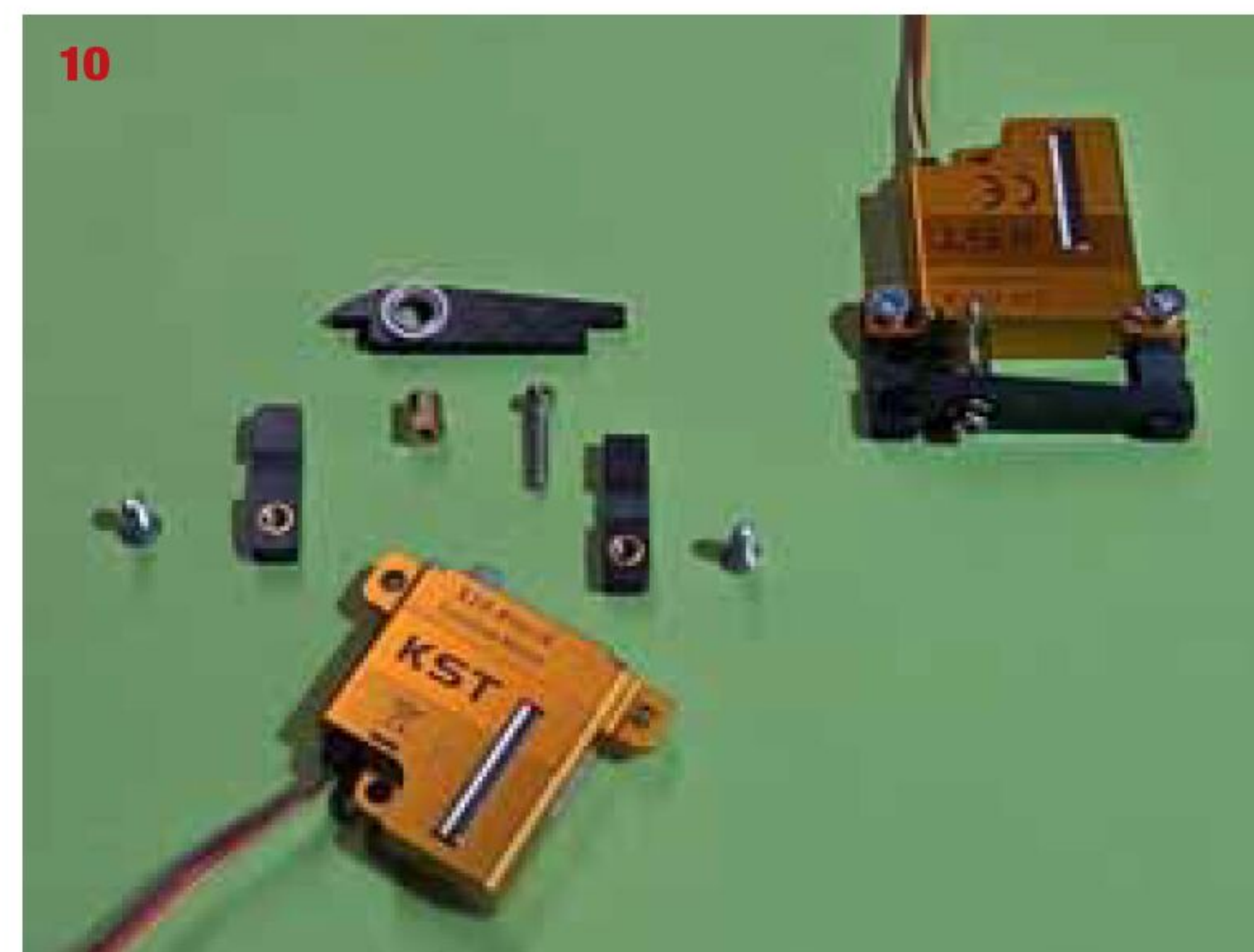
08 The small light bar from Unilight was glued to a flattened area on the leading edge of the vertical stabiliser.

09 The FES drive consists of a Hacker 'A50-12L' (450 kv) with 6s LiPo, a 14 x 8 inch folding propeller and a 'Smart Pro 115' from Kavan.

10 | 11 The elevator linkage at a glance. Above are the individual parts from Heizkoffer.de and the finished assembly; below is the model with the parts installed.

With the help of a small laser, I aligned the landing gear exactly in the centre of the fuselage. This allowed me to determine the four corners of the landing gear cover to be cut out and drill each with a millimetre. With the fuselage upside down on the model stand, I was now able to cut out the cover with a diamond cutting disc. Since the cover is only 50 millimetres wide, I decided to leave it in one piece. I then mounted it so that it could move using CFRP hinge levers from Wemo and a glued-on Bowden cable tube. I glued 0.4-millimetre-thick and five-millimetre-wide strips of white ABS to the inside of the fuselage to seal the cut joints. After sanding the glued areas thoroughly, I was able to finally glue the landing gear with its frame into the fuselage. I then connected the flap to the wheel axle with a piece of fabric-covered rubber. It is now pulled in directly when retracting and pushed up by the wheel bracket when extending.

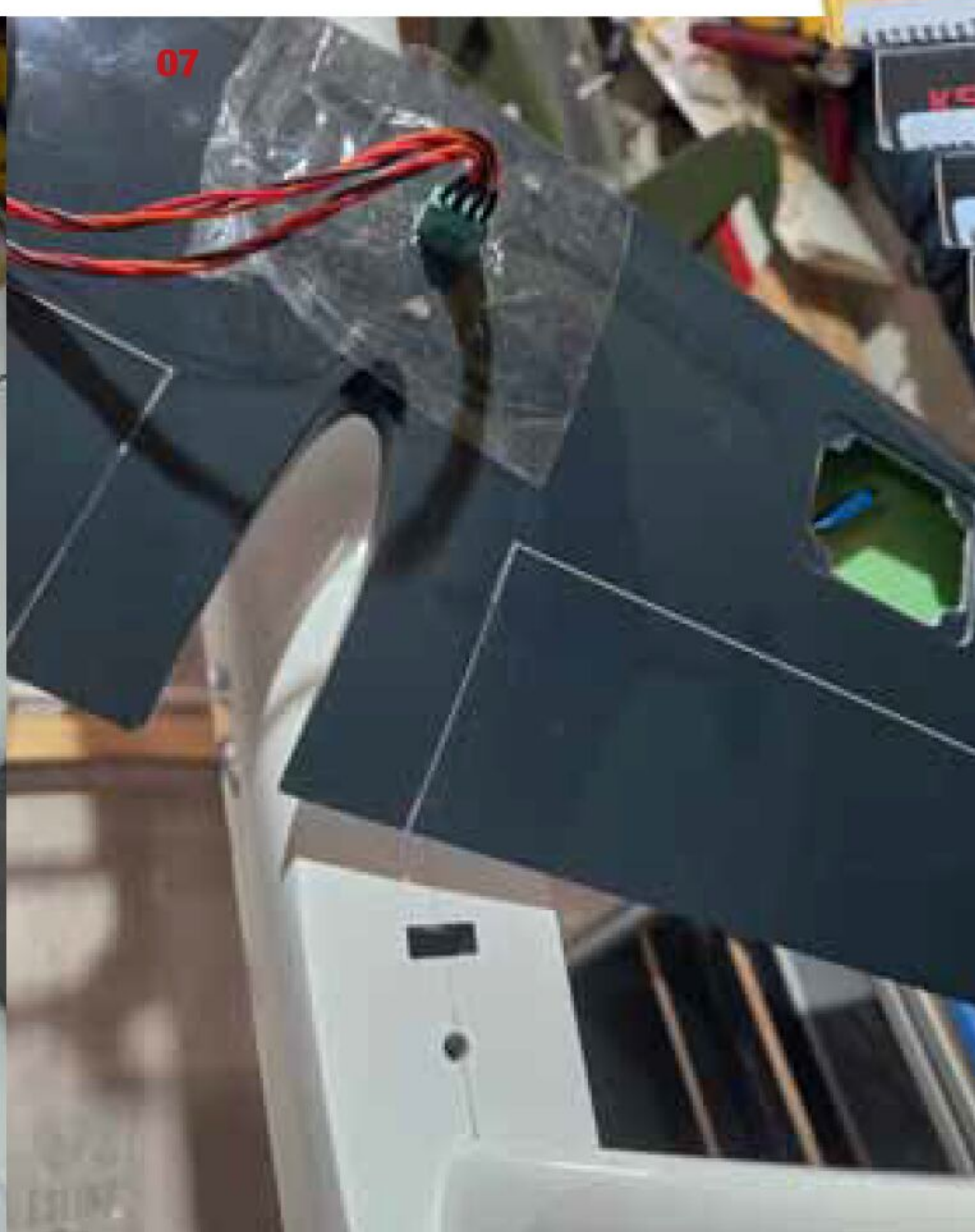
The Wemo tow coupling is also a great innovation. A CNC-machined aluminium insert provides stable mounting and also gives the coupling pin precise and resilient guidance. The coupling servo is also installed using a specially designed servo frame. The highly flexible coupling cable is screwed into a guide on the servo frame. This ensures that the entire system is play-free and absolutely reliable. For the milled aluminium part, all that is required is a 13-millimetre diameter hole in the fuselage floor.



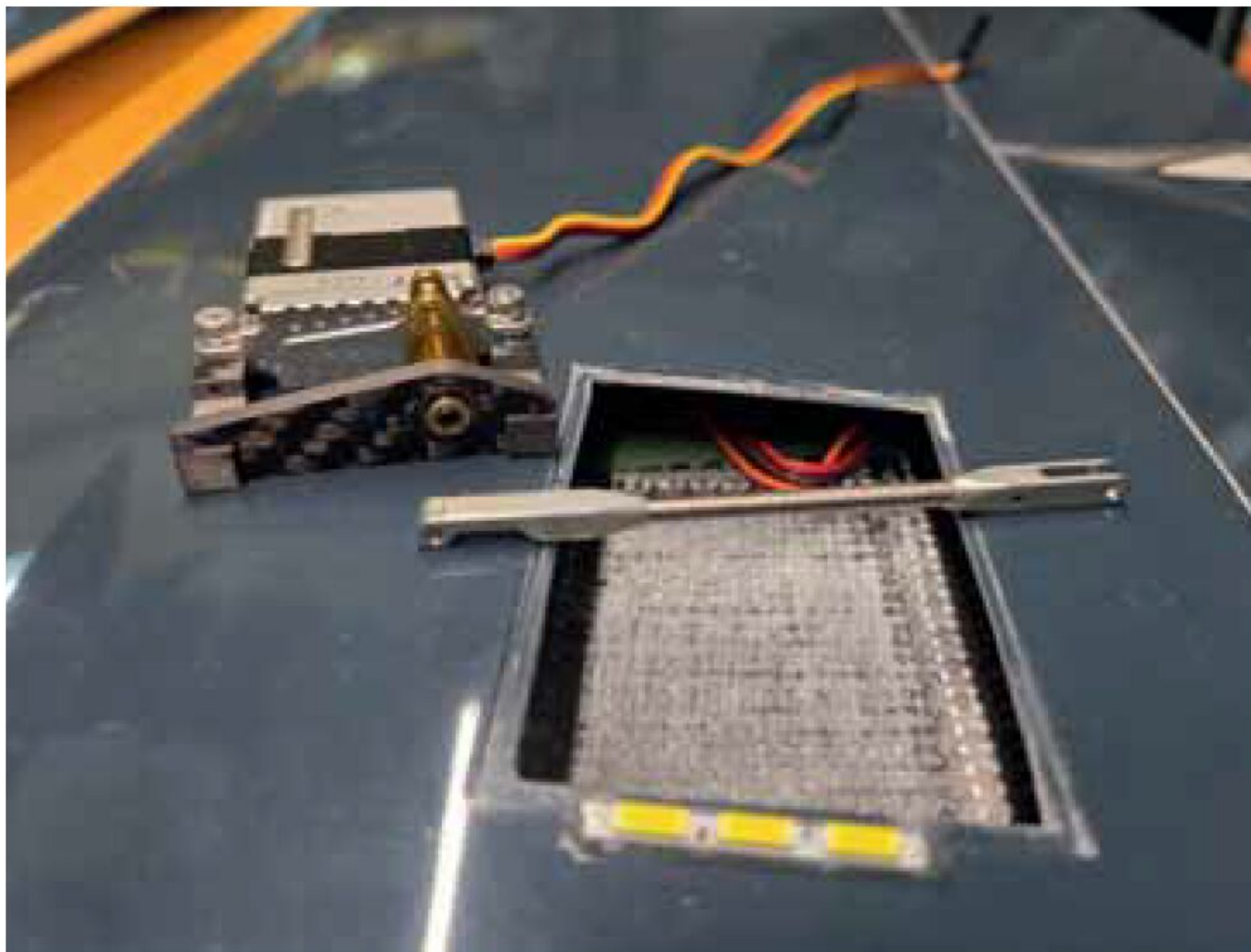
It is then glued in place with 'UHU plus endfest 300'. A circular shoulder gives the coupling a precise hold. The coupling set also includes a snap hook, which is also secured with the coupling pin. Screwing the servo mount onto the rear landing gear bulkhead and connecting the rudder with Kevlar cords as a linkage completed the first construction phase of the 'ASK-13R'. The servo for the rudder is a 'BLS 915' (40.5 x 20 x 38 mm; 78 g) from KST.

Next step: The drive! Based on my positive experiences, I decided to use a Hacker 'A50-12L' (450 kv) with 6s LiPo and a 14 x 8 inch fol-

ding propeller for the 'ASK-13R' as well. Unfortunately, the ground clearance of the fuselage does not allow for a larger diameter. The 'Scale blunt' spinner with a diameter of 50 millimetres from Florian Schambeck proved to be a perfect fit. I designed the motor bulk with a diameter of 52 millimetres and milled it from 4 mm CFRP sheet material. The drive is controlled by a 'Smart Pro 115' from Czech company Kavan. This is the first time I have used propeller positioning here. To install the drive, I cut off the nose of the fuselage at a distance of 20 millimetres, roughened the inside of the fuselage and inserted the frame with the motor mounted. With a brass tube attached as a



KB3Aero recommends KST servos. One of the two 'X10 Pro-A' servos for the elevators is still missing from the picture.

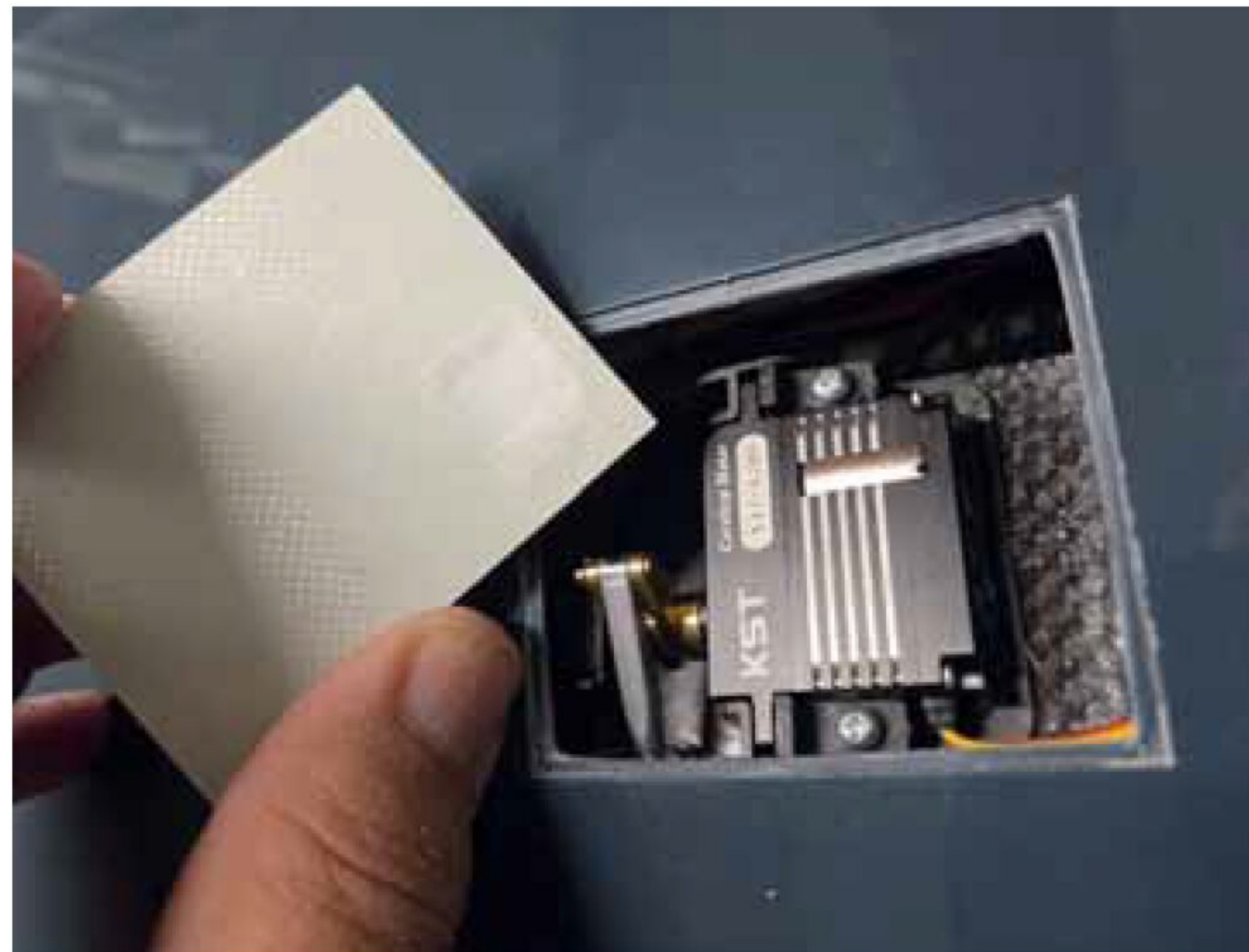


Here is the aileron linkage with KST servo and the individual parts from Heizkoffer.de. The light bar from Unilight is also clearly visible.

visual extension of the motor shaft, I was now able to adjust the alignment. I always set the motor camber to around three degrees to the fuselage longitudinal axis, with the pull simply 'a little to the right' when viewed in the direction of flight. I fixed the frame in the fuselage with two drops of superglue before unscrewing the motor again and finally gluing the frame in place with thickened epoxy resin on both sides. The controller was placed diagonally behind the

motor and the fuselage wall. I will go into more detail about the installation and adjustment of the propeller positioning in the next article. The same applies to the selection of the 6s battery, whose capacity I will choose based on the required weight.

I also followed KB3Aero's recommendation for equipping the wings and tailplane with servos and chose exclusively KST products: two 'X15-



In order to make full use of the height of the servo shaft, the shaft cover on the flaps had to be milled out a little.

1208' (35.5 x 15 x 32.5 mm; 40 g) for the flaps, 'A12S' (35.5 x 30 x 12 mm; 32 g) for the ailerons and 'X10 pro' (30 x 10 x 33.5 mm, 25 g) for the two elevators. The control horns in the wing flaps were already glued in place by KB3Aero. The linkage bushings on the upper wing surface were also already in place. Prepared linkages made of threaded rods and clevises were also included. But I wanted to go one step further and contacted Thorsten Rauber from Heizkoffer.de in Germany. His high-precision linkages from Tomas Liu are highly regarded in the gliding scene. In addition, Thorsten Rauber offers a service for calculating and designing lever lengths and deflection angles in order to find the best possible linkage. His goal is always to use the full servo deflection to achieve the best and most accurate resolution of the control path. Having started in the summer of 2021, Torsten Rauber has already stored a large database of linkage solutions for countless models.

The flap deflections recommended by KB3Aero were taken as a basis. The rudder horns glued into the flaps had a distance of 21.9 millimetres between the hole and the hinge axis. For the ailerons, the distance was 19.7 millimetres. The servo wells had a height of 24.6 millimetres (flaps) and 20.1 millimetres (ailerons). This made it possible to use servo levers with a maximum length of 15 millimetres. In order to achieve the recommended control surface deflections, a maximum travel of 50 degrees was required on the ailerons and 85 degrees on the flaps. As a result, a servo arm with a length of 13.5 millimetres was calculated for the servos on the flaps and a length of 10 millimetres for the ailerons. For the elevators, the result was a servo lever with a length of 10 millimetres and a control horn with a distance of 13 millimetres from the hinge axis. The 16 mm control horns offered by Thorsten Rauber were inserted into the shell until the 13 mm were precisely adjusted. I then made the linkages myself using threaded rods and aluminium clevises from Heizkoffer.



The team behind KB3Aero (from left): Michele Mancini, Cesare Sarti, Nicola Ambrogioni and Alberto Ferraroni.

de. Working with the components was really enjoyable because everything is coordinated and fits together perfectly.

For the final installation of the servos, everything was assembled, screwed into the servo frame with counter bearings and finally glued in place. Thorsten Rauber was also generous with tips. For example, he suggested fixing the servo frames to the wing at one of the four corners with thick superglue and activator spray. This prevents them from slipping while the resin hardens. The result was absolutely play-free and highly resilient linkages, the likes of which I had never seen before. And at the end of the day, I said that this would not be the last model with linkages from Heizkoffer.de.

The last major construction phase on the model for the time being was to equip it with ACL lighting from Unilight in Austria. I already had the best experience with this on my 'Discus', especially when flying with several colleagues in the same area, having to look away from the model and then being able to see it again immediately thanks to the lighting. I mounted three of the new 'BAR3-220x3-WE' light bars, each weighing just two grams, on the model. One directly on the servo shafts of the ailerons on the

underside of the wing and a third on the leading edge of the vertical stabiliser. Here, I filed the leading edge slightly flat along the length of the lighting unit so that I could glue the light bar in place. With the 'Black.1 Plus' 1-channel control, I can now select 15 different flashing or lighting modes by programming the servo travel on the receiver output. The lighting is powered by a separate 3s LiPo battery with approximately 1,200 milliampere hours

With the installation of the 14-channel receiver from Powerbox on the fuselage floor directly in front of the landing gear, the fuselage construction was nearing completion. The lengths of the finished wiring harness from KB3Aero fit exactly into its position. As a little extra, I mounted the new 'GPS V3' sensor from Powerbox behind the cockpit canopy and let it protrude through the top of the fuselage. I hoped this would provide me with as much telemetry data as possible, which I could use to evaluate the flight performance.

But that's a story I'll report on in one of the next issues of AUFWIND, as soon as I've completely finished the beautiful model, given it a custom paint job and had a chance to fly it extensively.■

Philipp Gardemin

INFO

The concept of the 'ASK-13R' was presented in detail in AUFWIND 1/2024 (only in German). The magazine can be reordered from the AUFWIND shop.

www.aufwind-shop.de



The handover of the model at Tomahawk was significantly supported by Jürgen Friedel (centre).

GPS NEWS

sections

ANDREAS KUNZ IS WORLD CHAMPION IN THE SCALE CLASS

The GPS Scale class world championship in Vipava, Slovenia, set new standards. In eleven scoring rounds, one of which was discarded, 2,476 triangles were flown in 349 flights, covering a total distance of 5,978 kilometres. Only on one day were no scoring flights possible due to persistent rain.

Von Beginn an ganz vorne dabei war Andreas Kunz. Andreas Kunz was at the forefront right from the start, achieving the maximum possible result with 10,000 points and winning all rounds.

Even his discard round was still a top result with 923 points. He flew all rounds with his self-built model 'Nimbus 3'. The model, with a wingspan of 8.5 metres, was the result of a private team project. The moulds were taken from a project by Florian Schambeck that was never realised. The 'Nimbus 3' was designed and developed by Philip Kolb specifically for the GPS flight task. Andreas Kunz worked with friends for three years on the prototype, which made its maiden flight in March 2025. The model glides best at a flight speed of 58



Andreas Kunz (centre) became world champion with the maximum possible number of points, ahead of Michael Kreß (left) and Florian Griesse.



Gerhard Köberlein, Tadej Gostinčar (competition director), Anton Lavrenčič (mayor of Vipava), David Marc (president of MD Ventus) and Melita Lemut Bajec (organiser) welcomed the participants to the World Championship.

The power tow team from Switzerland brought all models up to altitude: Silvio Meier, Urs Schuppisser and Urs Moor (from left).



kilometres per hour. This makes it ideal for low-thermal gliding conditions, such as those that prevailed during the World Championships in Vipava. "That worked quite well," said Andreas Kunz, summarising his choice of model after the World Championships. In stronger thermal conditions and higher wind speeds, Andreas Kunz would have used a 'Glasflügel 604' from TUD. The model achieves better gliding performance at higher flight speeds, which allows for a higher number of triangles and higher average speeds.

The final day of the World Championship was once again exciting: Andreas Kunz was in first place, ahead of Michael Kreß and reigning world champion Florian Griesse. Andreas Kunz and Florian Griesse flew together, almost in synchronised flight, to the maximum of six laps each. In the following round, Daniel Aeberli and Michael Kreß – both flying the large 'SB-10' from Chocofly – went head to head. With nine laps each, Michael Kreß maintained his lead over second place with 9,812 points, relegating Daniel Aeberli to fourth place in the final results (9,618 points). Florian Griesse took third place with 9,812 points. He flew the 'Glasflügel 604' from TUD, with which he had already won the world championship title two years ago.

The world championship was organised by the MD Ventus club in Vipava, Slovenia, from 8 to 12 September. Tadej Gostinčar was appointed competition director. There were 32 participants from Australia (1), Denmark (2), Germany (12), France (1), Great Britain (1), Austria (3), Switzerland (10), Slovenia (1) and South Africa



This is the GPS class with the large high-performance models. Here are the top three finishers with their models.

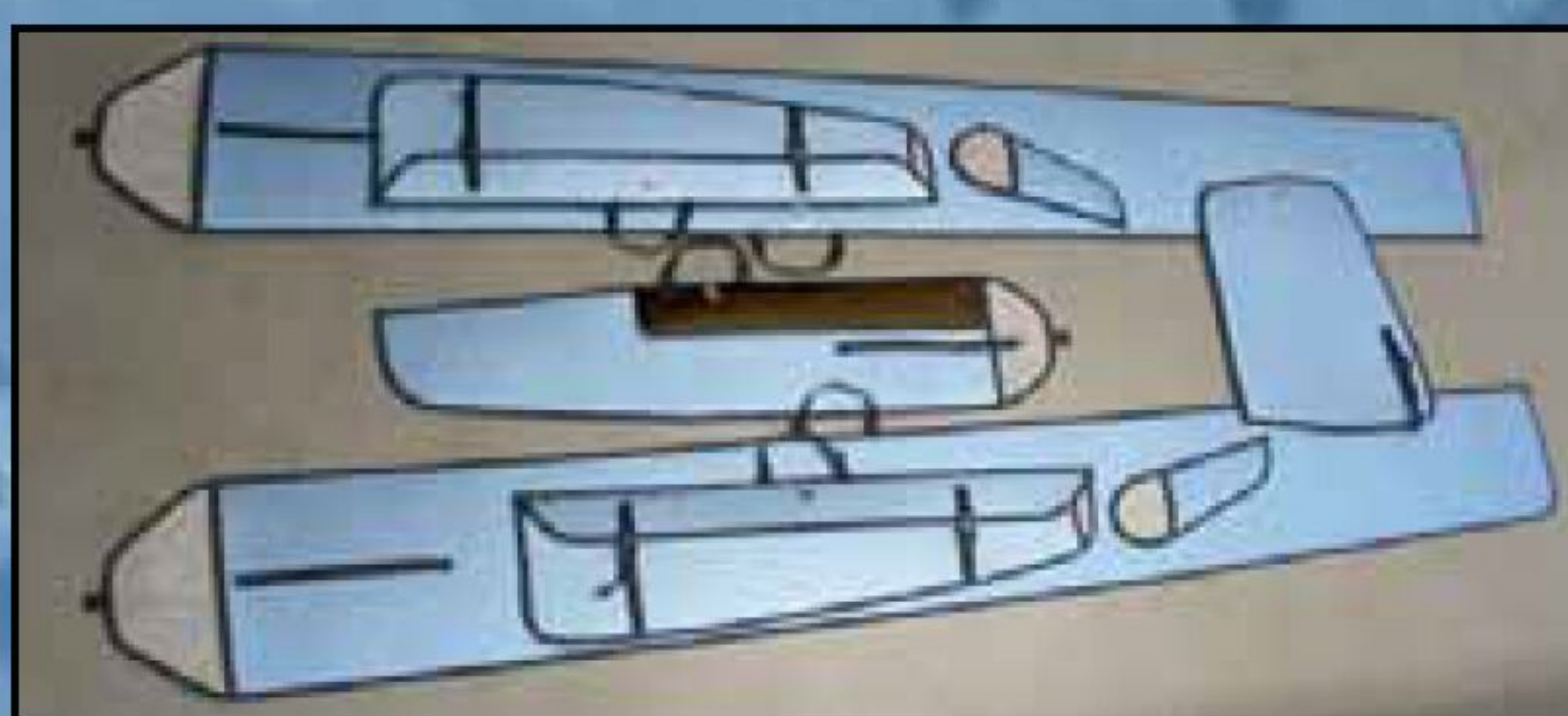
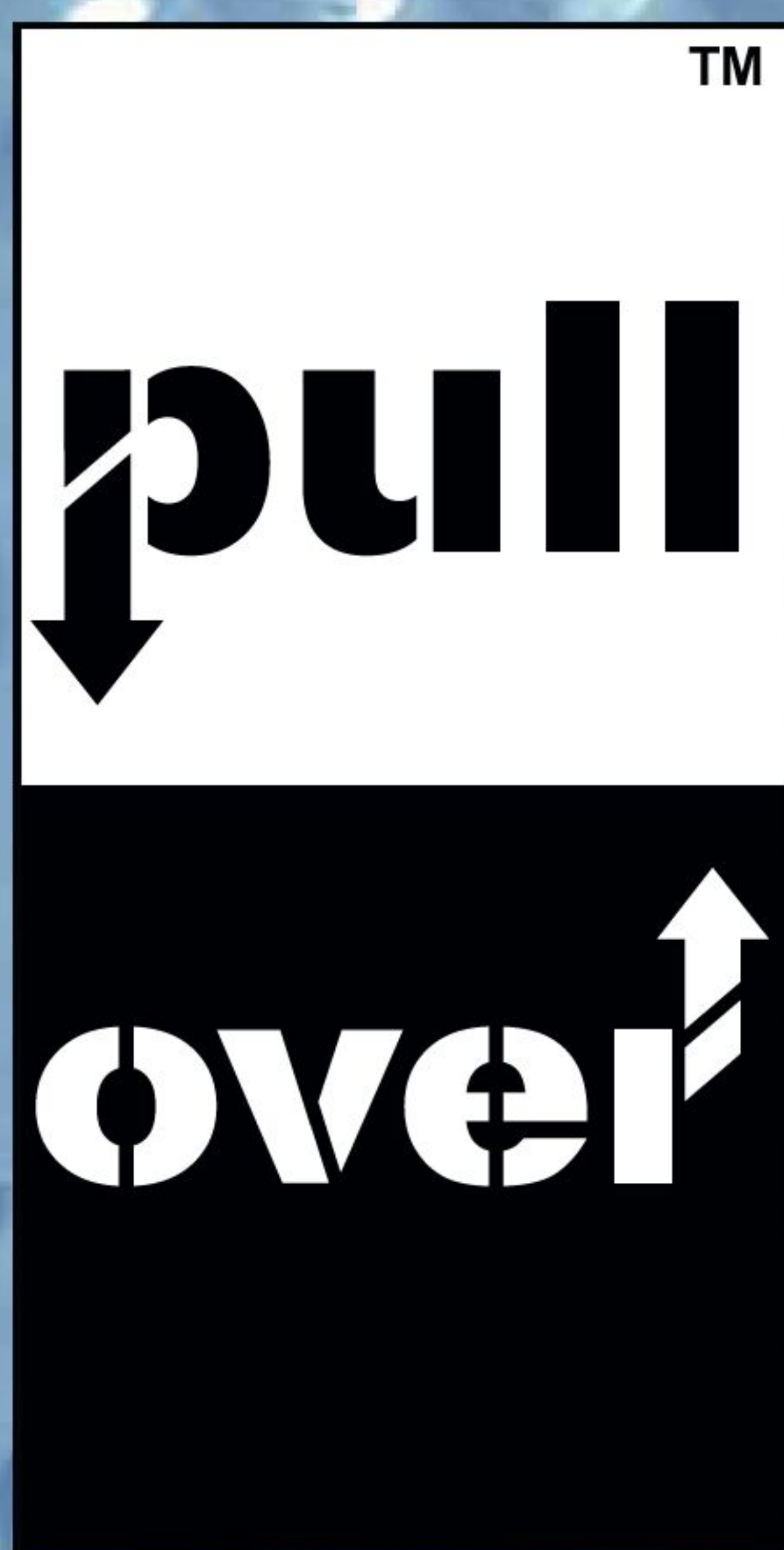
(1). Immediately after the event, the participants paid tribute to the organising team and the club for their organisational efforts and hospitality.

Editorial team
Photos: Maja Makovec

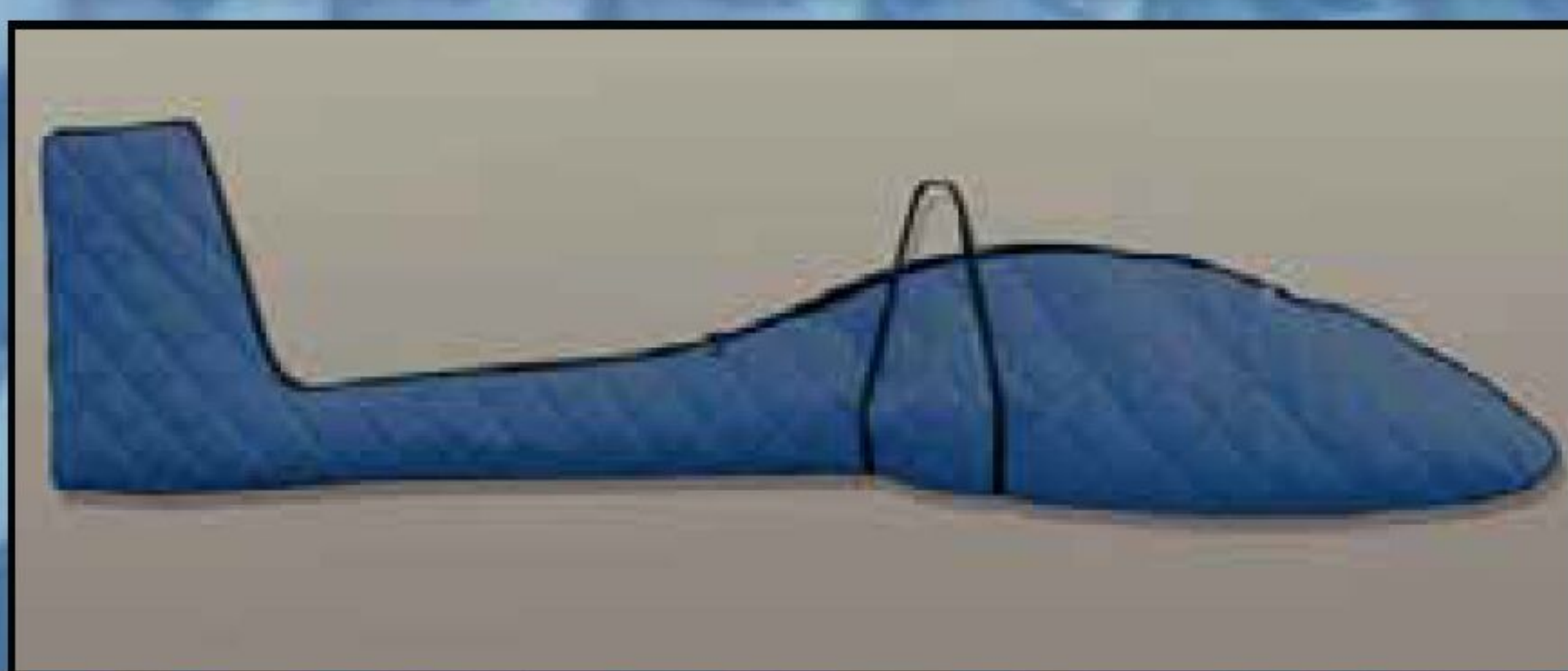
The large club grounds of MD Ventus provided the perfect venue for the World Championship.



protection for scale and sport gliders



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It was the maiden flight day of the new 'Eternity' (report in AUFWIND 3/2025) and the 'Maxa Pro'. Shortly before sunset, we allowed ourselves some fun and practised this joint launch. In the absence of a photographer, we placed the camera on a tripod and were able to get this nice picture.

Location: **Model airfield Szilágy (Hungary)**

Pilots: **István Inotai (left), Kristóf Sör**

Models: **'Eternity' (left), 'Maxa Pro'**

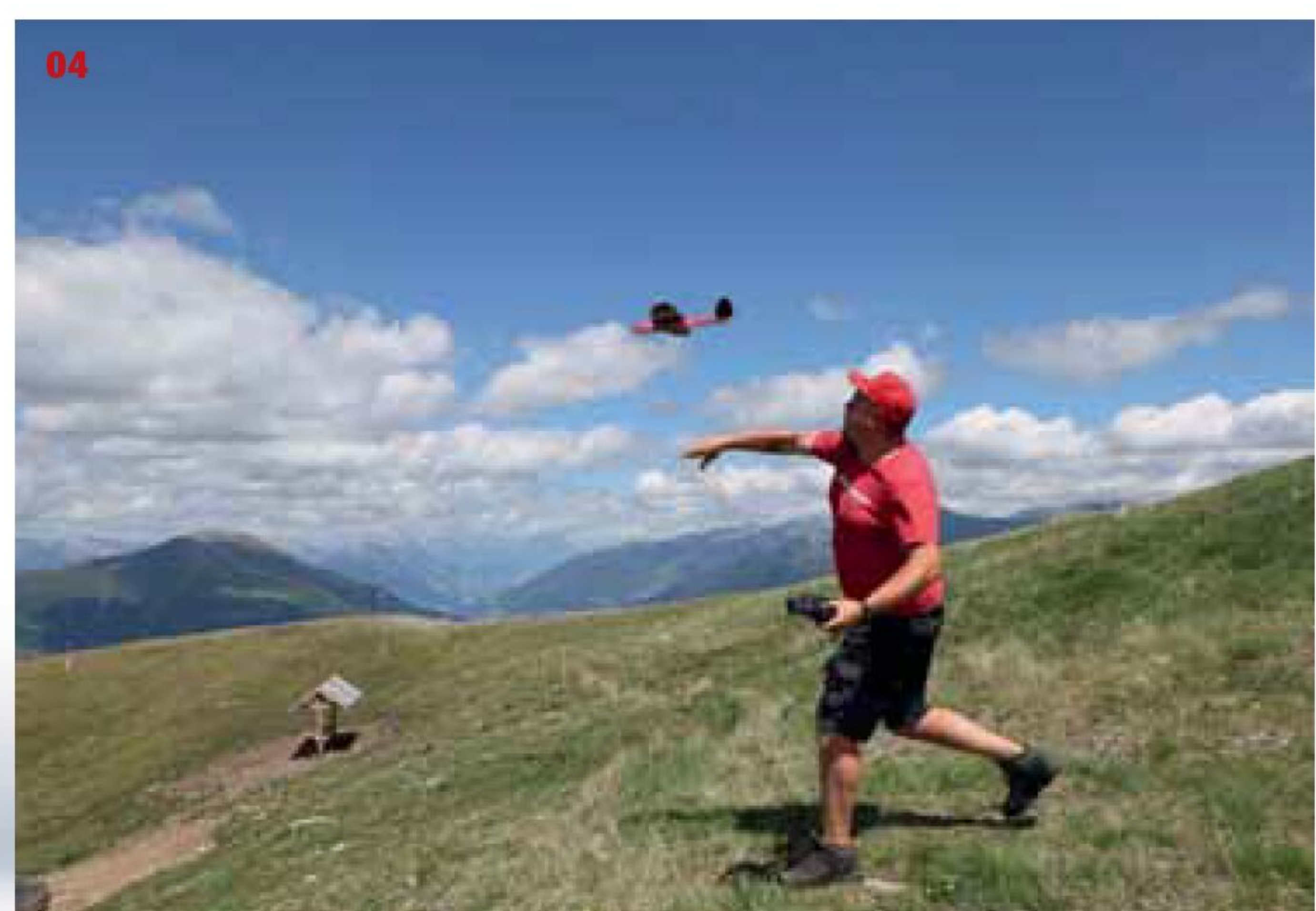
Photo: **via István Inotai**





FLYING CIRCUS

EUROPE'S LARGEST ALPINE MODEL GLIDING EVENT





At Flight Composites with company boss Ralf Steinbach, the focus was on numerous models, such as the 'JS2', the 'AS-33' (4.2 m, from 6.5 kg), the 'Ice-X' (3.77 m, from 4.9 kg) and the 'Magma Race' (3.03 m, from 6 kg).

The last weekend in June is traditionally dedicated to the Flying Circus in Fiss (Tyrol, Austria). Organiser Gerd Holzner and his team once again welcomed over 110 international participants and numerous exhibitors. Thorsten Häs was there on behalf of AUFWIND.

Every model pilot is welcome to participate actively on the Schönojoch at an altitude of 2,500 metres. Anyone who can safely control their model and present their insurance and competence certificate as well as their eID can actively participate. With the umbrella bar, the large sun

01 Richard O'Brien, John Pearson, Bill Scott, David Stevenson, Ralph McCarthy and Brendan Shelly met at Dublin Airport, flew together to Munich and then travelled to the Flying Circus in two hire cars.

02 The KST team led by Andreas Kulb brought along numerous current servos and flew them in various models.

03 | 04 CHA-Servo presented its specially designed glider models, ranging from very small to very large. The small 'Firlefan' (50 cm, approx. 155 g) was presented in Fiss as an ARF model in wooden construction.

05 Unilight boss Ulrich Rockstroh also took the opportunity to actively participate and demonstrate the powerful flashlights in practical use. Here with the Tomahawk 'Swift' (3.3 m) in his own Unilight design.

06 Chocofly and Daniel Aeberli focused on the new 'AN-66D' (4.66 m). The model now has larger outer wings, a longer moment arm on the fuselage and a T-tail.

05



06





Composite RC Gliders gave the brand new 'Trinity' flying wing (3 m, from 2.1 kg) its first public appearance. The model was presented in detail in AUFWIND 5/2025.

terrace and permanent sanitary facilities, model pilots and spectators are well catered for. Especially for the Flying Circus, an extra ascent permit is always obtained from the Austrian air traffic control authority Austro Control and a corresponding NOTAM (Notice to Airmen) is issued so that other aviation participants are also aware of the airspace restrictions. The take-off and landing area on the Schönojoch is cordoned off and the flight control ensures that order is maintained among pilots, spectators, hikers and bikers. Traditionally, Saturday ends with a joint

twilight flight at the Perdatscher Bichl model airfield near the village of Fiss.

The numerous participants from Germany, Austria, Italy and Switzerland were joined by a group from Ireland, Northern Ireland and Scotland, who travelled to the Flying Circus especially for the event: Richard O'Brien, John Pearson, Bill Scott, David Stevenson, Ralph McCarthy and Brendan Shelly met at Dublin airport, flew

to Munich together and then travelled to the Flying Circus in two hire cars.

In addition to the model aircraft enthusiasts, manufacturers and suppliers are always actively involved as sponsors with their team pilots. This year, CHA-Servo, Chocofly, CNC-Luftsporttechnik, Composite RC Gliders, Flight-Composites, FW-Models, KST Servos, PS-Models, Samba Models and Unilight.at accompanied the Flying



Another special feature was the 'Táltos Pegasus' with a wingspan of 3.5 metres from Paco Scale Models in Hungary, flown by Stefan Nam.

Circus as commercial participants and sponsors. Other companies supported the event for the big pilot raffle on Friday evening: Hacker Motor, Ständerwelt, Teil-Q, Modellflugbrille, MK-Modelltechnik and the publishers of the magazines FMT, MFI, Flugmodell and AUFWIND.

Rookie Day, which promotes model gliding and youth development, is also an integral part of the Flying Circus programme. Experienced model glider pilots from the Flying Circus team and the participating manufacturers are available as coaches. Anyone interested in high-altitude model flying can receive individual coaching here. This part of the Flying Circus will continue to be offered in the coming years and will be expanded to further promote model flying.

Next year, the 30th edition of the Flying Circus will take place, once again on the last weekend in June.

Thorsten Häs

07 Vlastimil Vostřel from Samba Model presented the ‘Pike Paradigm’ for the GPS Light class (4.7 m) as well as numerous other models in the ‘Pike’ series. The models demonstrated their suitability for everyday use, even in alpine conditions, at the Flying Circus.

08 Swiss slope flying specialist Röbi Disler also impressed with his thermal flights. Here with his homemade ‘DG-505 Elan’ with a wingspan of 6.7 and 7.5 metres respectively.

09 Special models have always been part of the Flying Circus, including this ‘IS-A Salamandra’ by Josef Leng. The model has a wingspan of 4.2 metres and weighs around ten kilograms.

10 ‘Paul and Michi’ – the pink foam models and their pilots.



Jürgen Stropp-Kilian during a teacher-student flight as part of the promotion of model flying on Rookie Day. Here with 6-year-old Luis from Saxony.



At Schönjoch, at an altitude of 2,500 metres, model aeroplanes grow on trees.



THE MULTI-TALENT

ROBBE'S 'AVALANCHE MINI'

Gliders with a wingspan of around two metres have long enjoyed great popularity. Vincent Hecht has also found great pleasure in Robbe's slope flying model.

This model size combines compact transport dimensions with good flight performance. All the more so when fibre composite materials are used. Robbe has also taken on this model class with the Avalanche Mini. The model is made entirely of carbon fibre, which promises great strength reserves.

Even after my first inspection of the model, it was clear to me that I was dealing with a very good price-performance ratio: the surfaces were smooth, the fit of the wing and tailplane joints required no reworking, and the individual components were nice and light. There were no burrs on the leading edges, which I was particularly pleased about. I was also impressed by what I saw inside: the spar webs were made of vertically positioned, glass-coated balsa wood and were also extended along the

connector pocket to the root rib. The connector pocket itself was wrapped with carbon fibre roving's. Only the dimensions of the pocket and the connector made me a little suspicious at first. They are smaller than I am used to seeing on other models of this size. To cut a long story short: everything withstood the stresses of flight without any problems.

The components and their weights at a glance:

Complete fuselage:	243 g
V-tail:	74 g
Wing:	683 g
Connector:	68 g
Small parts:	14 g

Total empty weight: 1,082 g

Each wing half has a ballast chamber measuring 150 x 20 x 10 mm, which can be loaded with up to 500 grams of brass. The ballast itself is not included in the scope of delivery, but can be ordered from Robbe or made yourself.

The accessories include two servo cover sets for the wing: one set with a bulge for servo arms and one set with a completely flat surface. This allows you to choose the right cover depending on the linkage and servo size used. The wooden servo board for the fuselage extension did not strike me as particularly sturdy. I replaced it with a four-millimetre-thick GRP board. A set of clevises with linkages was also included with the model. However, I opted for rudder linkages from Heizkoffer.de, as I have installed these many times in the past and am impressed by their quality and lack of play. I then ordered a set of protective bags for the wings, tail and fuselage from Fy-and-Cover.de.

The construction of the 'Avalanche Mini' was no different from comparable full GRP/CFRP models, but detailed assembly and operating instructions are included – a clear advantage for those building such a model for the first time. CHA servos were installed for all rudder functions. The HV85H is used on the ailerons and flaps, and the DS115 on the V-tail. The thin 8.5-mil-





The quality of the GRP/CFRP components is outstanding and spare parts are also available.

limetre thickness of the HV85H is an advantage when installing it in the thin wings. Unfortunately, the position of the control levers in the V-tail described in the instructions was not correct. It is advisable to assemble everything dry first and check that it works before finally gluing the control levers in place. The solder joints holding the balls on the control levers were not satisfactory ex works, so I resoldered them myself. The rest of the assembly according to the instructions was then easy. With the linkages from Heizkoffer.de, the servo arms were so small that I could use the flat servo covers.

Completely calm and relaxed, I set about testing the flight with the 1,330-gram model. I found that the centre of gravity was significantly

FACTS

The ,Avalanche Mini‘ from Robbe
An everyday model with performance

Wingspan: 2,000 mm
 Length: 1,185 mm
 Weight: 1,330 g
 Wing area: 32.3 dm²
 Wing loading: 41.2 g/dm²
 Price: 739.99 euros

Available from Robbe Modellsport/
 Modellbau Lindinger,
 phone: +43-7582/813130,
www.lindinger.at

further back than recommended by Robbe. I now fly the model with 95 millimetres instead of the 84 to 88 millimetres recommended by Robbe. Their values are very conservative. With the centre of gravity further back, the ,Avalanche Mini‘ becomes very agile around the transverse axis. I also increased the deflections according to my preferences to make the model more manoeuvrable.

The model impressed me with its good acceleration and manoeuvrability. It follows all control commands very precisely and is also very easy to keep on course when turning. With increasing ballast, the ,Avalanche Mini‘ becomes more and more dynamic and develops more pulling power. Structurally, I couldn’t see any problems, and even the connector with its compa-



The wings were equipped with CHA servos and linkages from Heizkoffer.de.



A protective bag set from Fly & Cover was manufactured to match the model.

atively small cross-section withstood all loads without any problems. My only criticism is the hinges: they are made of tear-off fabric and are therefore too soft. This is not conducive to the long-term play-free operation of the control surfaces. In my opinion, reinforcement or redesign would be appropriate here.

In short, I was impressed by the flight performance and overall good quality of the ,Avalanche Mini‘. Thanks to its small pack size, the model is always with you and is great fun even on smaller slopes.

Vincent Hecht



The model offers a lot of flying fun and excellent flight performance.

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ASK-13R(e loaded)

Scale: 1/4
Wingspan: 4.0 m
Empty weight: approx. 7 Kg
Flight weight: 10.5 – 12.5 Kg
Wing loading: 95 – 110 g/dm²
Carbon / Glass fibre

 **KB3AERO** www.kb3aero.com
fly@kb3aero.it

STROBE BAR3

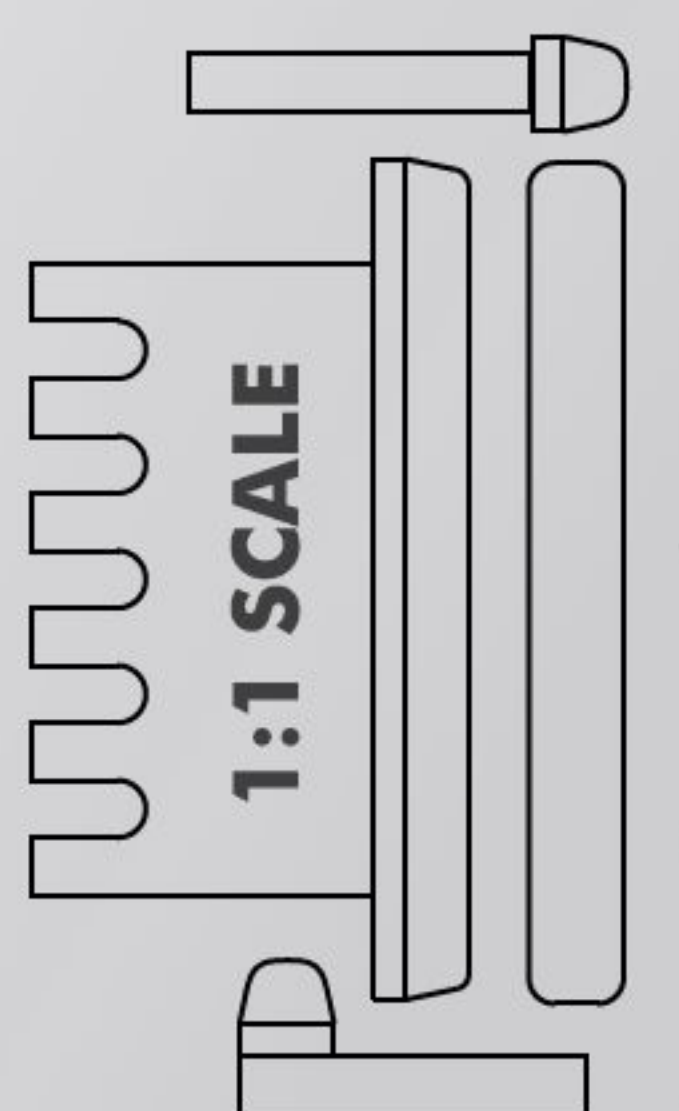


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„VERY BRITISH“

VISITING THE WESTON PARK MODEL AIRSHOW

15,000 visitors, 200 pilots and numerous exhibitors came to the Weston Park Model Airshow in the heart of Great Britain in mid-June. The event offers a great insight into the model sports scene in Great Britain. Philipp Gardemin was right in the middle of it.

For me, the 2025 season was all about two visits to international model flying events. Shortly before I flew to the USA at the end of June (my report on this in AUFWIND 5/2025), I was still in Great Britain. This is because the most important open-air trade fair with a large air show and a supporting programme that I have never experienced before has been taking place here for a long time.

Getting to Great Britain was very easy: I drove from southern Germany via Koblenz and Aachen, past Brussels through Belgium and

finally a short stretch through northern France to Calais. On the way there, I paid a visit to Bert Delaere in Bruges, Belgium. He runs an impressive model shop here and specialises in large models from numerous manufacturers and from his own imports, among other things. Even though he already generates 70 per cent of his sales through his online shop, he has been sticking to the tradition of brick-and-mortar retail for over 20 years. Unfortunately, I didn't have enough time in Bruges, but I know for sure that I will definitely visit Aerobertics again. Bert Delaere was also an exhibitor at Prowing and the Segelflugmesse, both in Germany.

In Calais, I stayed near the ferry port. The next morning at 8 a.m., I took my reserved place on the P&O ferry. In beautiful weather, I enjoyed the 90-minute crossing of the English Channel until I finally entered the long-awaited left-hand traffic in Dover. Four hours later, passing London, Northampton and Birmingham, I arrived in Weston-under-Lizard near Telford. A historic entrance and a huge poster for the air show marked the entrance to the site.

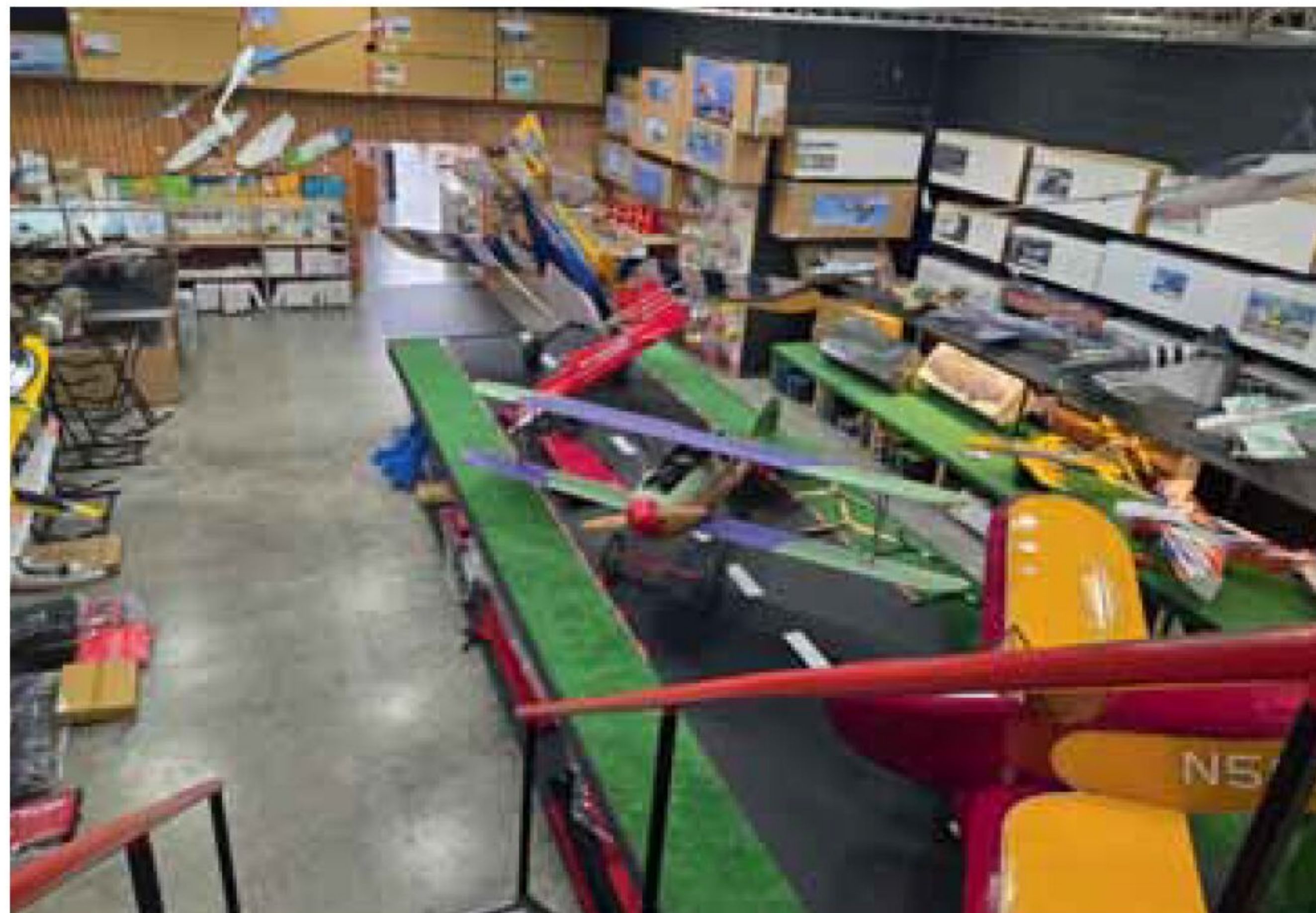
But I couldn't find anything resembling an airfield here. Instead, there was a park covering many hectares with old walls, its own road network, well-tended lawns and historic

trees. Just like you see in films. At the far end of the grounds, I discovered a grass runway where, as I later saw, even manned aircraft take off and land. And above all, there were trees here – lots of trees! So many that many model aircraft pilots wonder how it is possible to fly there. But for three days, an air show with international participation was conjured up here, which really offered everything you would expect from model flying – including an aerobatic show with manned aircraft, which also took off and landed on the grounds.

And then there was the supporting programme: in addition to a large number of commercial exhibitors from the British model sports scene, there were carousels, steam trains, stalls selling traditional British clothing, countless food and drink options and, above all, many sellers of used model aircraft. No matter where you looked, there were private and commercial sales of second-hand models everywhere. There were some real rarities and bargains, but also many items that would need intensive attention to get them back in the air.

With my own exhibition stand for AUFWIND, AUFWIND-English and Stich & Faden, I was able to talk to countless model sports enthusiasts. Among them were many guests from France, the Netherlands, Spain, Switzerland and also Ger-





In Bruges (Belgium), I visited Bert Delaere at his model shop Aerobertics.



Jorgen Pedersen specialises in reissuing historical kits. Here with the 'Howard DGA-3 Pete' from 1929.

many. The British in particular gave me valuable insights into British model flying. It was also very interesting to talk to the exhibiting model flying companies, almost all of which were from Great Britain. Three outstanding examples:

Jorgen Pedersen launched his company Modern Vintage Models (www.modernvin-

tagemodells.co.uk) in 2022. "I want to bring rather unusual models back onto the market as newly designed wooden kits," he said in an interview. He emphasises that he produces everything himself. One example is the 'Bernhard Gross' flying wing from 1948. The model, with a wingspan of 2.4 metres, has a central fuselage with a vertical stabiliser and a

pressure engine. But the 'Delta Rapier' model with a wingspan of just under one metre and the 'Boomer Bus' motorised model from 1941 with its characteristic barrel-shaped fuselage are also among Jorgen Pedersen's classics.

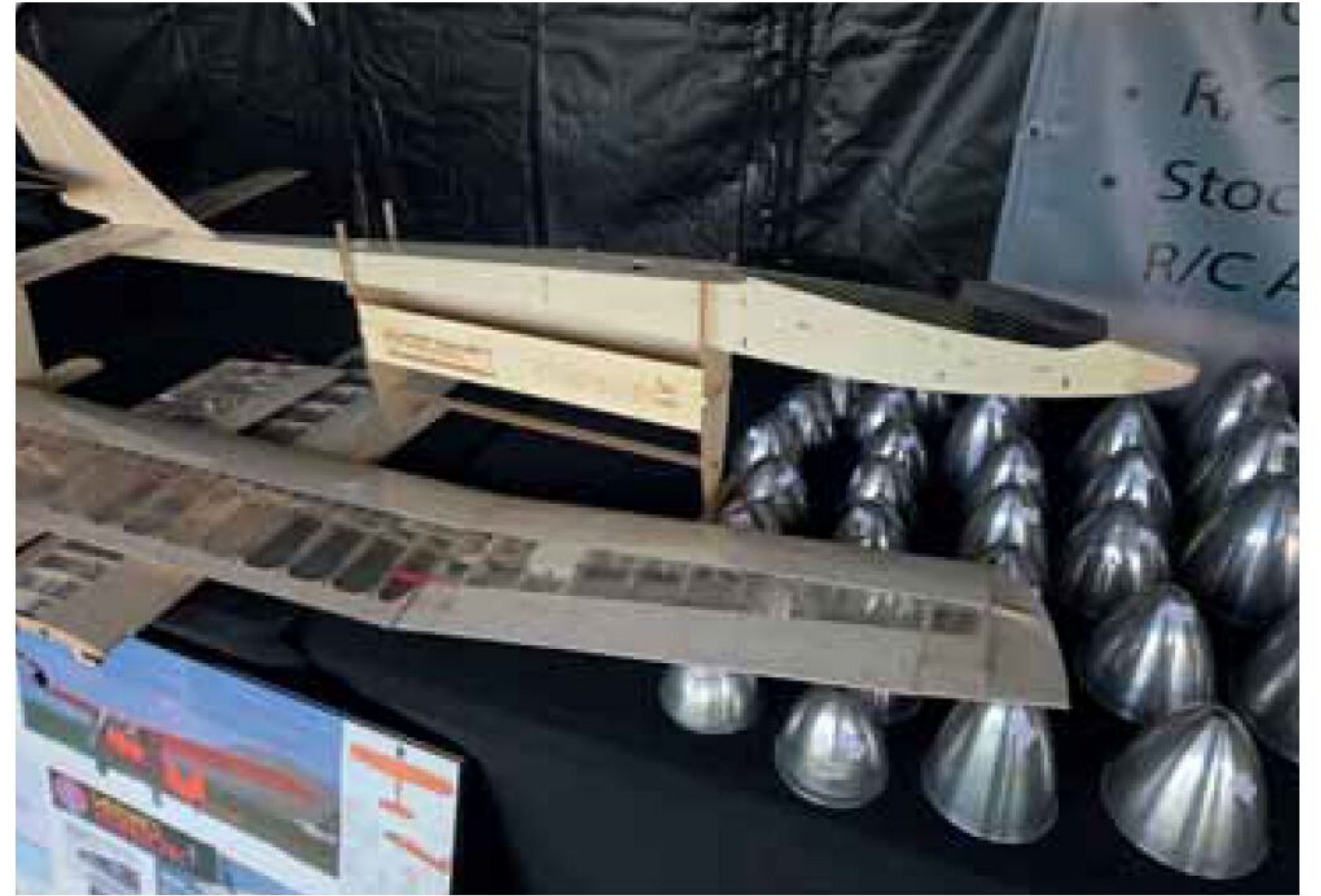
Briony and Matthew How were also at Weston Park for the first time with their company



▲ The pilots came from numerous countries, such as Andi Schaerer and Silvio Meier from Switzerland with their 'Blanik' gliders.

The Weston Park Airshow takes place in the middle of a large, historic park. ►





Briony and Matthew How offer classic, revised kits and innovative new designs.



Tim Pearce is dedicated to reissuing kits from the American manufacturer Topflite.



Anna Perry and Paul Gosling run Nexus Modelling Supplies and offer a selection of imported brand-name products, such as CHA servos and Powerbox Systems.

With over 15,000 visitors, the event was very well attended. Here is a photo taken shortly before the start of the evening and night flight show.



Power & Sailplanes International (www.powerandsailplanesinternational.co.uk). They offer classic, revised kits and innovative new designs. These include, for example, the newly introduced ‘Secret Weapon V2’ slope flying model, with a wingspan of 1.8 metres, made entirely of wood and predestined for exciting days of slope flying. Another highlight was the new edition of the ‘Sitar Special’ with a wingspan of 2.11 metres: “The model was originally designed by the Dassel brothers in the 1970s and held the F3B world record for many years,” reported Briony How. The design was first purchased by Solent Sailplanes before finally being acquired by Sailplanes International.

I contacted Tim Pearce in the run-up to the event. He founded his company Revived Planes (www.planesrevived.com) two years ago and it caught my eye on the list of exhibitors. I was thrilled to see that Tim Pearce is dedicated to reissuing kits from the American manufacturer Topflite. This includes the legendary ‘DC-3’ or ‘C-47’ with a wingspan of just over two metres. Needless to say, I took a kit home with me to Germany – a wonderful winter project. In addition to kits from his own production, Tim Pearce also offers a large selection of GRP parts, landing gear, cockpit conversion kits, etc.

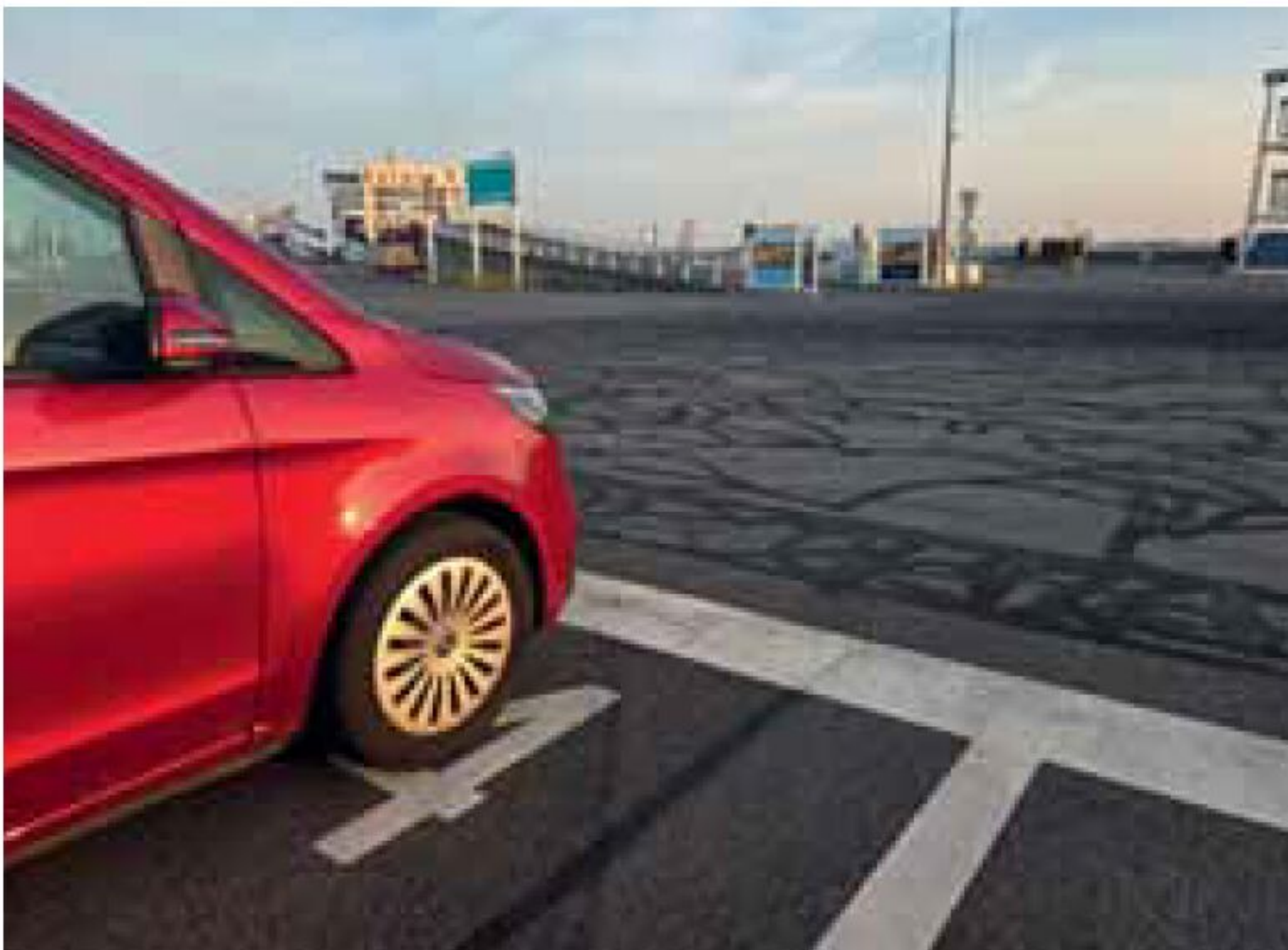


The view from the AUFWIND stand shows the size of the exhibition area very nicely. The runway is directly behind the trees.

Sunday evening, then, the journey home. A leisurely four hours to Folkestone, again very close to the ferry port. One night later, I took an early ferry back to France and six hours later I was back in southern Germany. I am certain that I will make this trip again next year.

The next Weston Park Airshow will be the 29th, taking place from 19 to 21 June 2026. It’s well worth it!

Philipp Gardemin



▲ My personal highlight of the trip to Great Britain was and always is the ferry crossing. 90 minutes to relax and enjoy a good breakfast.

◀ A distinctive feature of the Weston Park Model Airshow is the range of used model aircraft on offer. There are many bargains to be had, but also many models that still need a lot of work.

GREAT ALL-ROUNDER

THE 'IKURA GPS' FROM AER-O-TEC

Aer-O-Tec offers a wide range of glider models. For Gerd Giese, the 'Ikura GPS' is his favourite. With a wingspan of just under 4.3 metres and elegant winglets, this model almost has the character of a full-scale glider.

The performance and harmonious flight characteristics of the Ikura convinced me. As recommended by company boss Stefan Eder, I ordered the Ikura GPS with all the RC and drive components he recommended. As

an additional luxury, I treated myself to the partial assembly service for the wings. The Ikura in its basic design is not a new model. What is new, however, is the 'Ikura GPS' version with winglets. Technically, both versions



are identical. Only the wing tips have been supplemented with winglets. This results in a slightly larger wingspan of 4.29 metres compared to the previous 4.07 metres. Anyone with ambitions to fly with GPS can fly with the 'Ikura GPS' in the 'Sport' class. The 'Ikura GPS' has more than enough what it takes to be right up there with the best.

My first look at the parts confirmed Aer-O-Tec's reputation for high-quality workmanship. The grip and rigidity of the components were immediately apparent. I was naturally curious and wanted to see the Ikura GPS assembled in front of me right away. Unfortunately, this was not possible because the opening in the fuselage for the wing mounts was not large enough. The other components, such as the elevator halves and the wing mounts, could only be assembled with a lot of force. So, it was clear where I had to start with my model. First, I wanted to know

FACTS

'Ikura GPS' from Aer-O-Tec
A great all-round glider

Wingspan 4,286 mm
Length 1,731 mm
Weight 4,331 g
Wing area 79 dm²
Wing loading 54.82 g/dm²
Centre of gravity 98 mm
Price: from 2,690 euros

Available from Aer-O-Tec,
phone: +49-9825/1633,
www.aer-o-tec.de



- 01 | 02** My servo cables. The plug is loose in the fuselage.
- 03** The GRP wedge for correcting the angle difference is a moulded part and fitted without any reworking.
- 04** A 'HV-85' from CHA-Servo is installed for the elevator. The opening for the linkage had to be slightly reworked (marked in blue).

if there was a weight difference between the right- and left-wing parts. To make a long story short: the differences were negligible.

I had the outer ailerons connected to the centre aileron via the pin driver. I don't think that separate control of the outer flaps would offer any additional advantages. All four wing servos are 'KST-X10mini'.

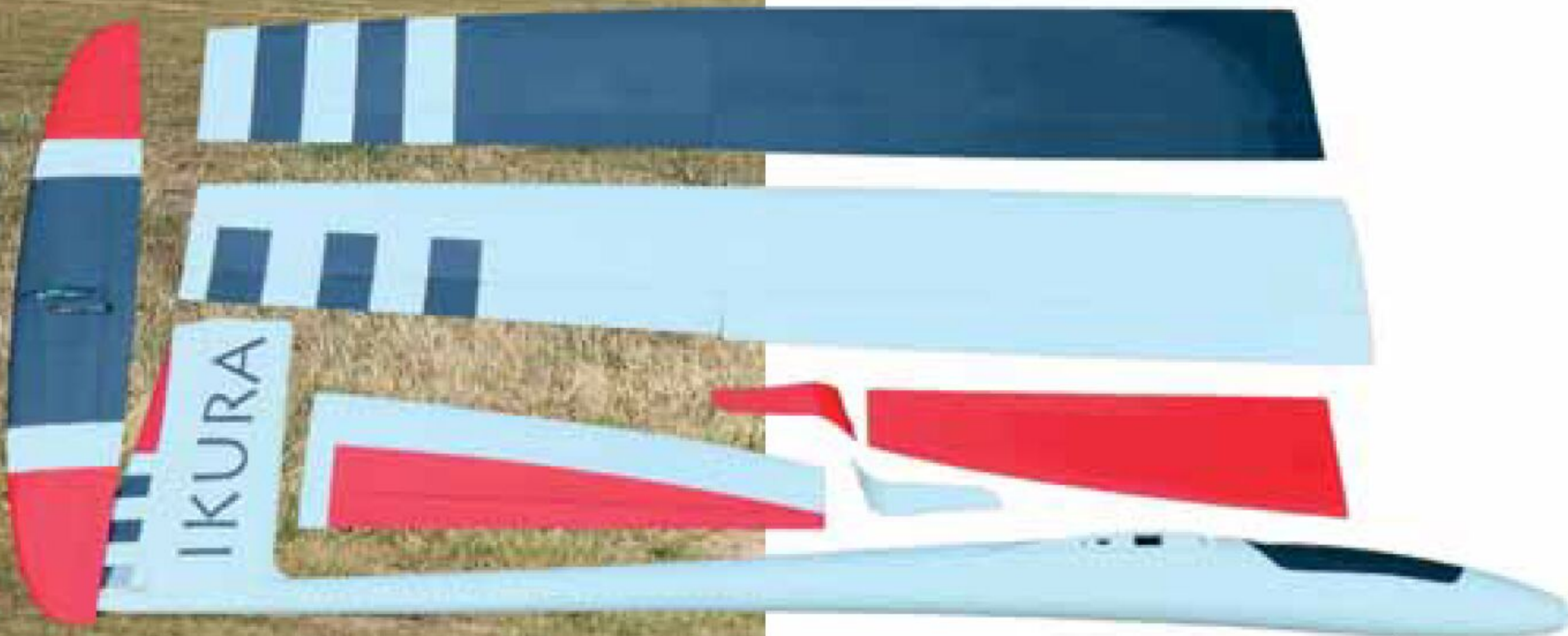
Then I took the wing plugs and reworked their surfaces with fine sandpaper on a flat board. This took some time, but the reward was plugs that fit snugly with only slight resistance when put together. Finally, all wing connectors were rubbed with talcum powder on the inside and outside.

For the openings in the fuselage, I gradually felt my way with a flat file to enlarge them and achieve the correct angle. This took a while,

The components of the Ikura GPS were of excellent quality.

but then the solid wing connector fit perfectly with a slight amount of play. I also took this opportunity to rework the openings for the MPX connectors on the fuselage to allow enough clearance for flexible connection. Contrary to Stefan Eder's recommendation, I only glued the MPX connector in the wing, leaving the connection in the fuselage free.

Now the time had come and the 'Ikura GPS' lay in all its glory before me. I was satisfied and motivated to continue building right away. First, a friend of mine wrapped the winglets in the colours of Germany. A visual inspection of the parts installed by the construction service earned me praise: impeccable work! Then I turned my attention to the elevator. Aer-O-Tec's flight tests had shown that the 'Ikura GPS' performs better when the angle of attack difference is slightly reduced. For this reason, the model comes with a GRP moulded part that reduces the angle of attack difference by almost half. My measurements showed a reduction from just under 1.2 degrees to approximately 0.6 degrees. I glued this wedge firmly to the elevator support. Next, I made the plug connection to the elevator servo and enlarged the opening to oversize. I fixed the counterpart of the plug in the horizontal stabiliser. To achieve symmetrical elevator deflection, I slightly enlarged the opening for the servo arm. The entire horizontal tailplane now sits stably and precisely on the vertical tailplane and is fixed with two screws. An angle check brought a satisfied smile to my face, because the angle to the vertical tailplane was exactly 90 degrees – that's not always a given. I am using a CHA 'HV85' servo on the elevator and a CHA 'DS115' servo on the rudder.



05



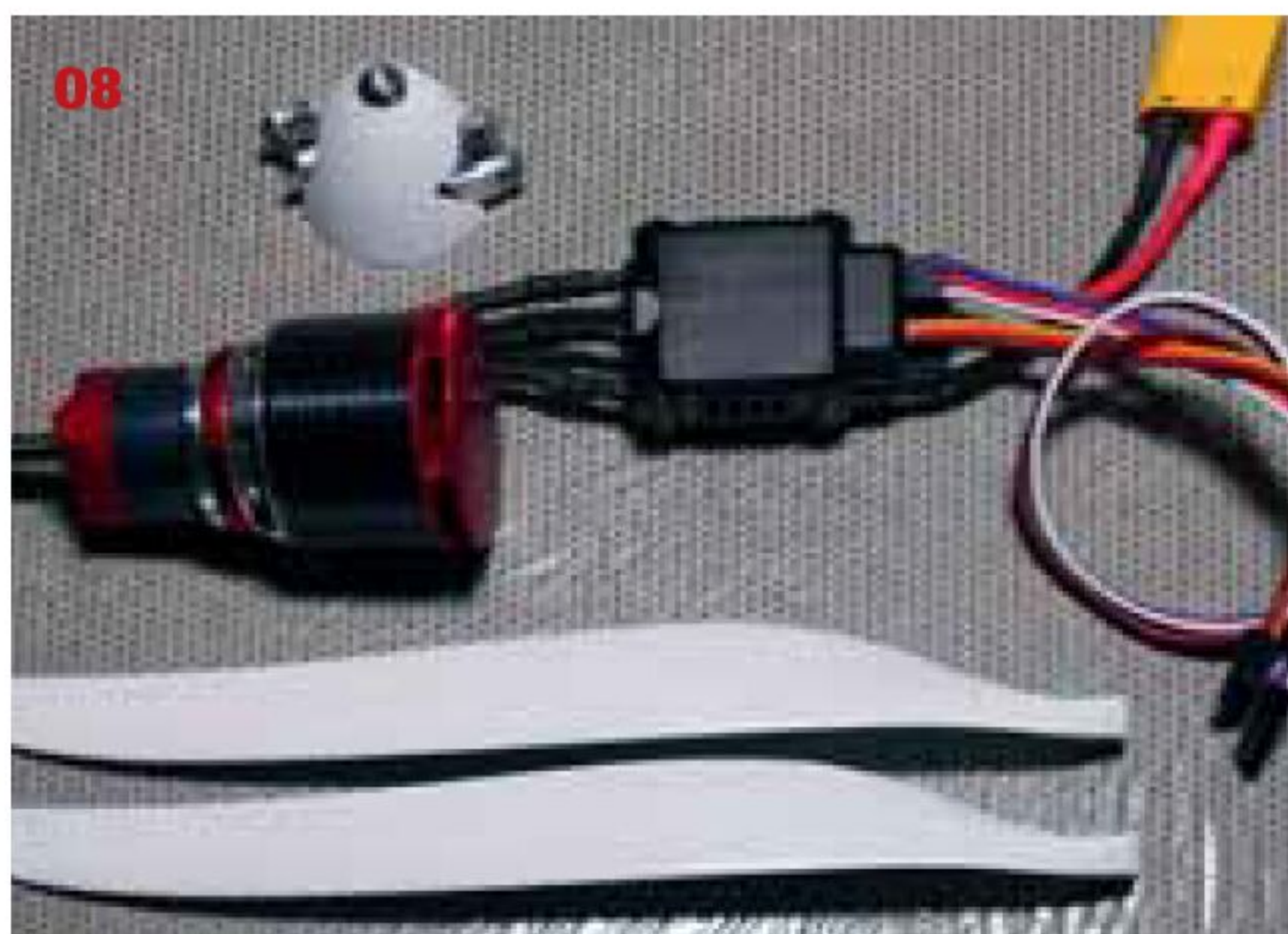
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08



09



05 I used the milled parts for the fuselage as suggested. This turned out to be perfect.

06 | 07 The Teck nozzle was installed with a hardwood block between the wings. Florian Schambeck supplied the aerodynamically well-covered version.

08 The drive at a glance: 'Pyro 400-15/5.2' from Kontronik, 'iESC65-8' controller from Powerbox and a GM Scale 18 x 10 inch folding propeller. Not shown in the picture is the 6s LiPo battery with four ampere hours.

09 Everything in the fuselage is very clearly arranged. The rudder servo is a CHA 'DS115' servo. The electronic magnetic switch for the backup BEC is also clearly visible.

Before continuing with the installation of the RC system and the drive components, I checked the centre of gravity. To do this, I fixed all the parts in the fuselage where I wanted them to be. It turned out that with a larger LiPo battery – in my case a 6s LiPo 'Xcube Yellow' with 4,000 milliampere hours – the centre of gravity was perfect with sufficient reserve.

With the fuselage still almost empty, the Teck nozzle was installed to compensate for the variometer. Whenever possible, I always fly with compensation. Anyone who has experienced the difference between flying without compensation (every elevator movement produces a variometer tone) and with compensation (elevator movements do not produce a variometer tone) knows immediately why. I use the 'Micro-Vario' from SM-Modellbau as my variometer. For those interested, a detailed test can be found on my homepage: elektromodellflug.de.

Now the drive could be installed. Aer-O-Tec supplies the 'Ikura' with a bonded CFRP motor bulkhead on request. I additionally covered the bulkhead with carbon fibre and resin to significantly increase the bonding surface. This was solely for my peace of mind, as I know how high the forces can be on the motor bulkhead during landing! In addition, the motor has been fitted with a customised hardwood support at the rear end to the fuselage. The motor is a 'Pyro 400' gear motor (5.2:1) from Kontronik. For the folding propeller, I chose a pair of 18 x 13 inch GM Scale blades on a 34 mm offset drive. The motor cables themselves are soldered as short as possible to the Powerbox 'iESC65-8' controller. Prepared in this way, the milled parts supplied by Aer-O-Tec fit well into the fuselage after a little sanding and were glued with resin.

Between the two parts, I attached the BEC backup battery (2s LiFe, 1,300 mAh) to the fuselage floor with Velcro tape. I connect this to a battery switch via a 'Microswitch 15' magnetic

switch. The second input of the battery switch is the BEC supply for the 'iESC' controller. This ensures that the systems are electrically decoupled with a redundant BEC power supply. These LiFe batteries are extremely stable over long periods and deliver a slightly lower voltage than my BEC supply (7.4 volts). The BEC voltage, which is approximately 0.8 volts lower, serves as an alarm signal. The transmitter then gives me a text message ('Attention, BEC backup voltage!') and I have over half an hour's reserve to initiate the landing in peace. Due to the decoupling of the batteries from the receiver and to cushion voltage peaks from the servos, a smoothing capacitor on the receiver is mandatory. I installed a 2.7 mF/16 V capacitor.

Now it was time to adjust and balance the model. I am a fan of the centre of gravity and angle difference scales offered by Mahmoudi Modellsport. The settings were based on Aer-O-Tec's specifications for the 'Ikura' GPS. Checking the centre of gravity and weight was a success: my goal of staying under 4.5 kilograms was achieved.

Extensive function and drive checks were also carried out. What I hadn't expected was the relatively high motor current. Checking with a clamp ammeter confirmed the value displayed on the transmitter of over 68 amps when stationary. That was too much for me, because I'm not a fan of using the controller's power beyond 100 percent when it's not getting any cooling air! With a GM 18 x 10 inch folding



My preferred approach angle for landing with the flaps fully extended.

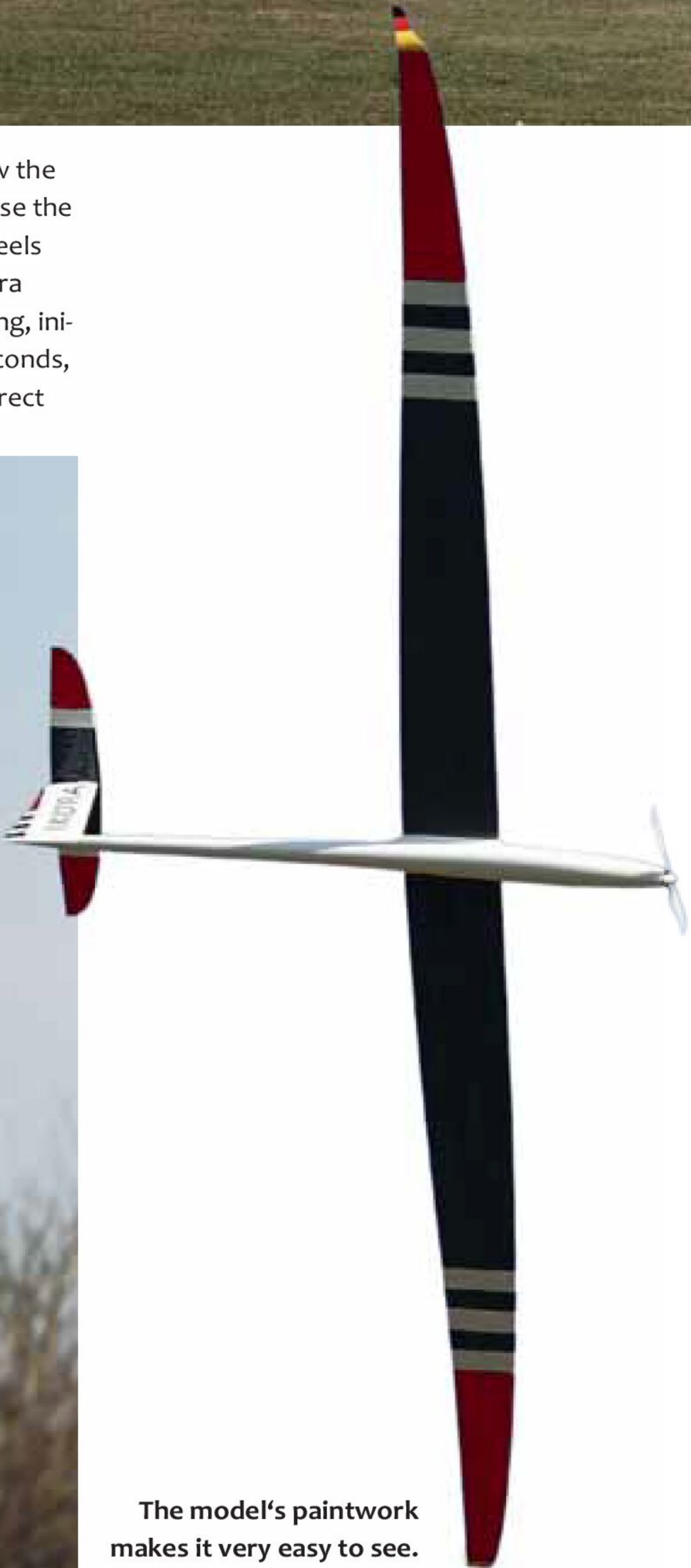
Starting the model is really easy and you don't need any javelin-throwing skills to do it.



propeller, the motor current finally settled at 56 amps.

Then it was time for the maiden flight. The day was mixed with strong gusts, but dry and partly sunny. I can't deny that I felt a certain uneasiness rising within me, because I had to decide

whether to use the launch trolley or throw the model myself. I opted for the latter because the engine pull is very high and the fuselage feels great to handle. A quick push and the 'Ikura GPS' rose into the sky as if pulled by a string, initially at half engine power. After a few seconds, I increased to full power. I only had to correct



The model's paintwork makes it very easy to see.

the climb slightly with the elevator. The engine pitch and pull have therefore been set exactly right by the installation service.

The model climbed so steeply at a good speed that it almost seemed vertical to me. Either way, I was positively surprised by the efficiency of the drive. A maximum speed of 18 metres per second was possible. With my drive configuration, the Ikura needs approximately 150 milliampere hours of battery capacity per 100 metres of altitude gain. With a 4,000 mAh battery (effectively 75 per cent, i.e. 3,000 mAh), anyone can guess how long you can fly after a good 18 climbs.

Back to my maiden flight: after ten seconds of engine running time and at an altitude of around 150 metres, I switched off the engine. For straight flight, only a few clicks on the elevator were necessary, but no corrections to the ailerons or rudder. I would describe the control response as spontaneous. I like that because it is very close to my flying style. After further climb flights and increasingly daring manoeuvres, I noticed a very slight tendency of the model to trim depending on speed. This meant that I had to stabilise the model with a small elevator trim depending on the speed. This was quickly corrected by moving the drive battery a good

five millimetres further back. A subsequent centre of gravity measurement then showed just under 98 millimetres. This allowed me to trim back to neutral in flight. Now the 'Ikura GPS' glided enjoyably across a wide speed range.

The control surface settings largely correspond to Stefan Eder's specifications. I only made minor changes. For example, I added slightly larger camber and running control surfaces in all flight phases. For thermal setting, I reduced the downward deflection of the flaps (differential) to almost zero in order to maintain the highest possible performance. Then, starting at half the elevator deflection, I programmed snap flaps in the speed warping as a percentage. It's great fun to see how sharply the model turns with this.

After further flights, the camber settings were on the flight programme. With thermal camber, the 'Ikura GPS' becomes significantly slower and circles tightly to the right and left without much of a mind of its own. When the turns got tight, the model only needed a little support. In the speed position, when trimmed correctly, it initially lowers its nose slightly and picks up speed to stabilise the flight path again. A short dive with a drop height of around 100 metres later showed a top speed of 170 kilometres per hour.

This alone was astonishing, given the pulling power of the Ikura GPS. After a sharp roll followed by a downward swing and a lower fly-by, the Ikura GPS climbed back up to an altitude of just under 80 metres. Sure, there's clearly more to come, but I'm gradually feeling my way to the limits. Incidentally, the highest G-load (Z-axis, vertical axis) was 6 G. The model's stall behaviour is completely uncritical: it lowers its nose significantly without suddenly tipping over. Landing is also almost child's play if the correction between the flap position and elevator trim is made in an adjusted curve. It took me a while to get the correction curve right. Once prepared, even strong downswings or flat approaches can be landed with precision.

In summary, I would like to note that the designer of the 'Ikura GPS' has achieved an excellent compromise between profile choice, weight and size. I was impressed by the model's universal range of applications. The design is elegant and almost true to the original, thanks in large part to the winglets. Its low weight and high strength make the 'Ikura GPS' an all-rounder on flat terrain and for slope flying.

I would like to congratulate Stefan Eder on this great model.

Gerd Giese



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THE JOY OF IRONING

technology

GREAT RESULTS WITH PICHLER'S 'FIX IT!' FILM

In a household with a modeller, the exclamation "I'm going ironing!" does not mean that he is now taking care of the laundry. No, it is more about completing a model. Philipp Gardemin has been working with the film.

With the 'Fix It!' range, Pichler Modellbau has also taken the step of offering its own ironing films. I too was curious to see and find

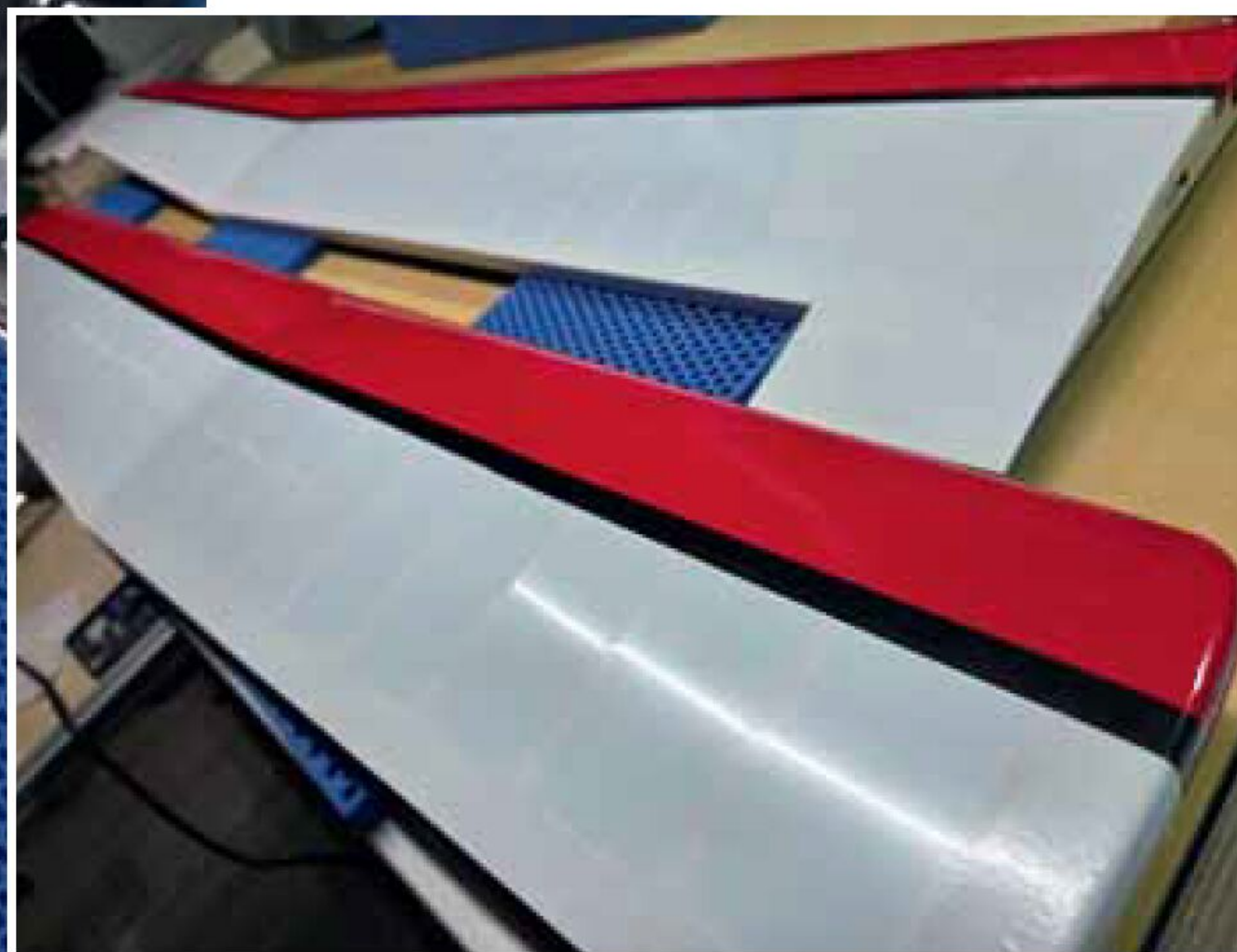
out how the new material compares to other brands. The range currently includes over 50 colours and a white fabric film. Company boss Harald Pichler told me that the selection will be continuously expanded.

The film is supplied in handy 2 metre rolls. Individual colours are also available in large 10 m rolls. This may sound inflexible at first

glance, but it has proven to be practical for my applications. Each roll comes with brief instructions, which, above all, specify very clear temperature ranges: At 120 to 130 degrees, cut-out details can be ironed on without shrinking or melting the edges. At 140 to 150 degrees, the film can be ironed onto wood. The film is then shrunk at 160 to 180 degrees, which can also be done with a hot air gun.

Two models were ready for assembly on the workbench: the 'Amigo XL' from SG-Modellbau and the "Aurora" flying wing from Pichler. While the 'Amigo XL' had already been primed with pore filler, I left the small flying wing finely sanded, well dusted and untreated. I wanted to see how well the film would stick.

Before I could start, I took my 20-year-old Jamara iron to the electrical appliance disposal centre and ordered the large 'Digital LCD' iron from Pichler, which has precise settings and a temperature display. On the advice of Harald Pichler, I also added the 'Pro Detailer' iron to my shopping basket. Thanks to a selection of small ironing feet, this should allow me to reach even the smallest corners.



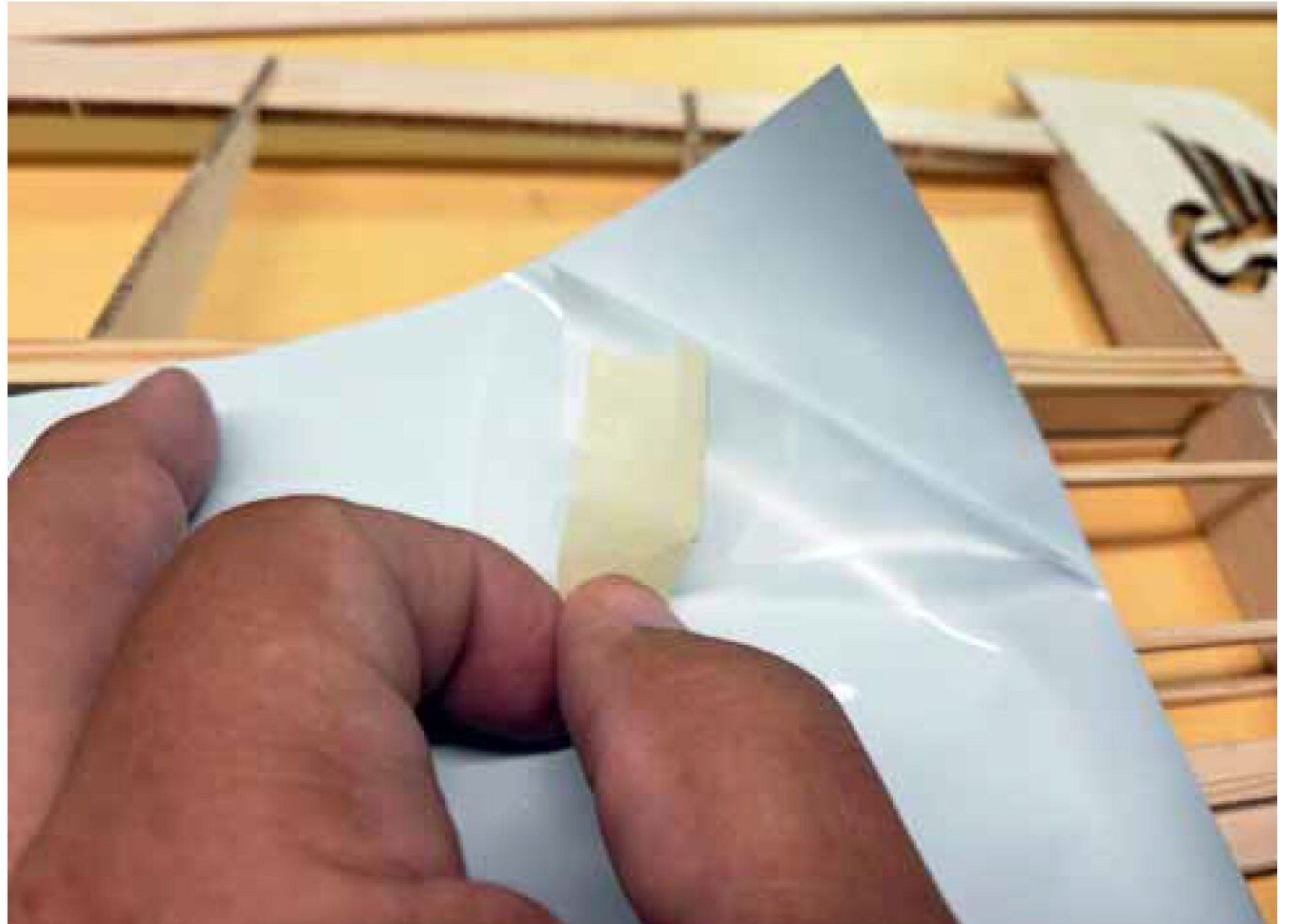
▲ The matt white is a great colour, shown here on the 'Amigo XL' from SG-Modellbau.

◀ The 'Aurora' flying wing was the first test object. The films offer very intense colours.

The foil rolls are rolled up very tightly, so to cut the foil pieces, you should roll them out on a flat cutting surface and weigh them down with weights. I always cut with a ruler and a sharp knife. Removing the protective film has caused many a model builder to despair, but it's child's play with a piece of paper tape stuck on.

I always start ironing by fixing the film pieces along the edges. Then I work my way from the inside out. I watch closely to see if any creases or bulges form. These must be smoothed out with a hairdryer or a lightly applied iron before pressing. I rub the film while it is still hot with a cotton cloth. I then ironed the small corners and edges with the 'Pro Detailer' iron – a real relief. How did I ever manage without it?

I was impressed with the film's adhesion right from the start, both on treated and untreated wood. However, I see the advantage of wood treated with pore filler and finely sanded as being the harder surface, which, when done cleanly, gives the impression of a GRP surface.



The protective film is best and most easily removed with a piece of adhesive tape.



Ironing on is quick and easy with the correct temperature setting.



With the 'Pro Detailer' iron, even small edges and details can be ironed on beautifully.

Ironing on decorative strips was also no problem. I had reduced the temperature beforehand, which did not have a negative effect on the adhesive strength. Furthermore, even with larger pieces of ironed-on film, no bubbles formed, which are caused by outgassing during the melting process of the adhesive. A coun-

ter-test with a higher temperature confirmed this experience. With the small flying wing in light blue, I had not pre-tensioned the film properly in some places on the ribbed wing. To my great surprise, the film could still be tensioned completely. I have had more problems with other products.

And what about durability? Well, one of my models with the film was left in the sun for days at two multi-days-events, at night in the cool exhibition stand, the next day back in the sun, and so on. Even after returning to my workshop at home, I could not detect any loss of film tension. Two bubbles on the top of the fuselage could be re-tensioned with a little hot air from a hairdryer.

In short, I am thrilled with the new film and look forward to using 'Fix It!' in the future. I am curious to see how the range of colours will be expanded and whether the fabric film will also be available in other colours.

Philipp Gardemin

TRY IT FOR FREE!

Subscribers to AUFWIND have also received a free sample of Pichler's 'Fix It!' film to test with this current issue. No subscription? Then order now at www.aufwind-shop.de and receive the sample free of charge (while stocks last).

Publisher & Editorial team



BUILT FOR THE FUTURE

VISITING THE NEW HEADQUARTERS OF POWERBOX SYSTEMS

The first day in August was all about the official opening of Powerbox Systems' headquarters in Donauwörth. Hosts Richard and his sister Eva-Maria Deutsch provided valuable insights into their expanding company.

Richard Deutsch described the new location as a significant milestone in the company's history and emphasised: "The location inspires and motivates us for the future." Eva-Maria Deutsch explained in an interview with AUFWIND: "The building has been in operation since March. The inauguration ceremony now marks the official end of the construction period, which lasted around a year." Planning had actually begun in May 2023 with an inspection of the previous building. The new site was acquired in July of the following year, and the ground-breaking ceremony finally took place on 9 February 2024. With an entertaining presentation and a specially created Powerbox song, a group of employees led by Jenny Elsner also congratulated their management on a successful

outcome: 'A place has been created where we all feel at home.'

The inauguration ceremony was attended by many model aircraft enthusiasts from the region, as well as numerous suppliers, customers, export partners and representatives of the press, including Stefan Höllein and Uwe Nemmert from Himmlischer Höllein in Coburg, Patrick Speidel and Lukas Nakir from CHA-Servo, Volker Weigt from Vspeak, Marc Hauss and his wife from France, and Paul Gosling and Anna Perry from Nexus Model Supplies in the United Kingdom. Powerbox Systems supplies over 100 different products to around 450 sales partners in over 60 countries. 'We specialise in RC systems and power supplies for model aircraft. We are considered the global market leader in this field,' emphasises Richard Deutsch.

The new site was built on an area of 2,500 square metres and offers the company around 2,200 square metres of usable space.



Eva-Maria Deutsch accepted congratulations from Lukas Nakir and his wife.



This also includes approximately 400 square metres of storage space. The converted space amounts to over 11,000 cubic metres. The new building employs 25 people in administration, development, production and warehousing. Previously, the company operated from two locations a few kilometres apart, as space was becoming particularly tight due to the production of the 'Core' and 'Atom' transmitters. The new location will enable further growth and create new jobs. Wolfgang Fackler, local minister, is delighted about this, emphasising in his welcoming address: "We need family businesses like this. Their down-to-earth philosophy is what makes our region special. Donauwörth and the surrounding area have gained another facet."

At Powerbox Systems, the focus is on in-house production. For example, battery connection cables and the many different servo extension cables are manufactured in-house. This also includes a specially purchased machine for crimping the servo connectors. Around 50 kilometres of the well-known Powerbox servo cable are currently processed here every year. The company's own 'Core' and 'Atom' transmitters are also assembled by four specially trained employees and equipped according to customer



The employees also congratulated the company with a birthday cake, a specially composed Powerbox song and lots of enthusiasm.

requirements. The Lilon batteries for the power supply systems, which are assembled at a specially equipped workstation, are also of great importance. The new company location offers much more space for in-house production, so that nothing stands in the way of further expansion.

AUFWIND would also like to express its gratitude for the long and successful cooperation, wishes the company all the best at its new location and looks forward to a joint future. ■

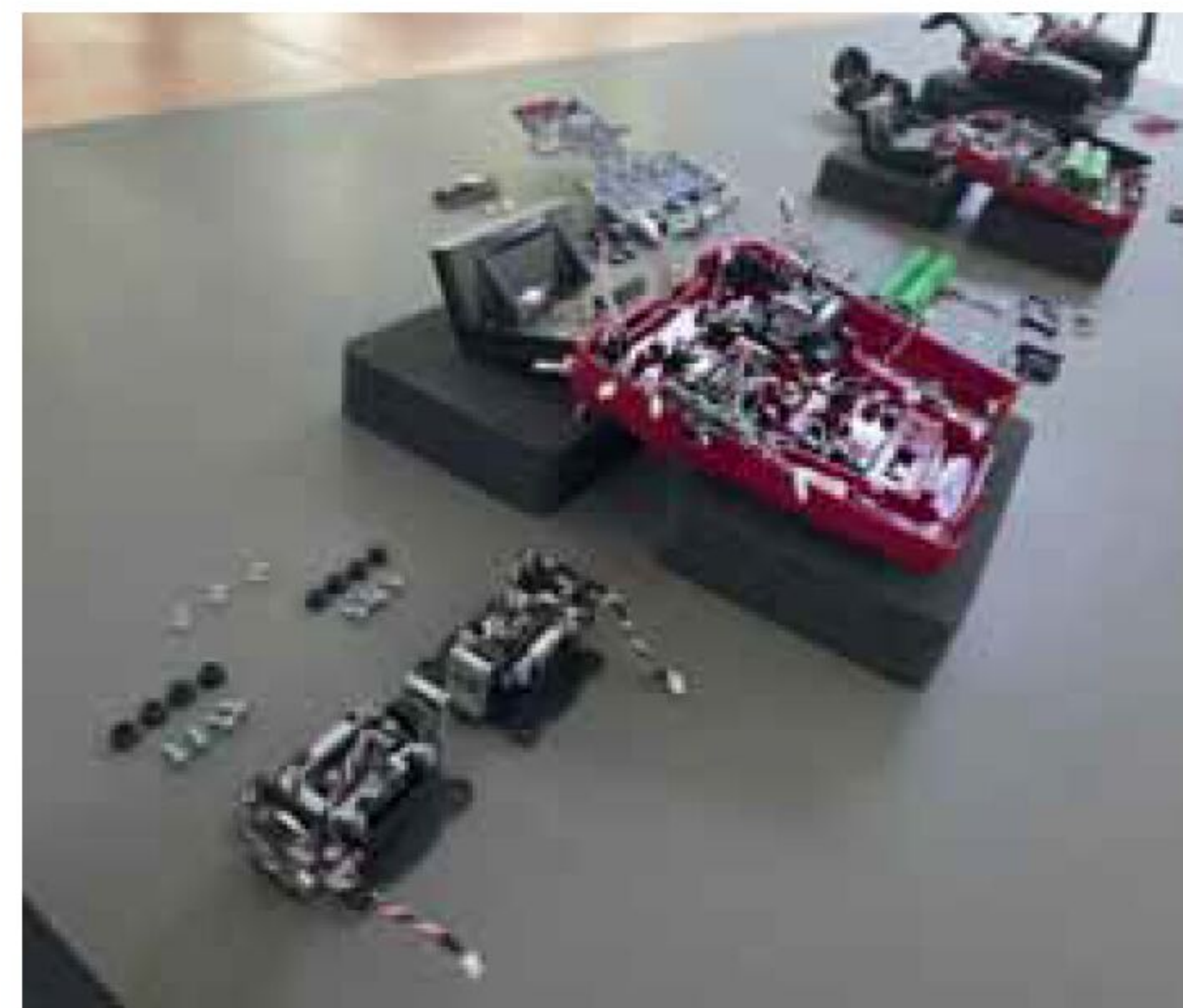
Philipp Gardemin



Cable production is at the heart of the company.



A specially purchased crimping machine assists in the production of the numerous servo cables.



The transmitters are also assembled and equipped in-house.

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The ‘Duo Discus’ impresses with its swept wings and unique geometry.



WELL EQUIPPED

THE 'DUO DISCUS' FROM WILDFLUG WITH IMPELLER ENGINE

Volker Kaul had wanted to fly a big glider with an impeller engine for a long time. The 5.33-metre 'Duo Discus' with a drive from CNC-Luftsporttechnik seemed like the right place to start.

In recent years, a number of new options have emerged for powering a glider model appropriately. For me, 'appropriately' means that it should also be possible to launch from the ground. Nose drives and retractable impellers are particularly noteworthy here. Nose drives with folding propellers are a common sight at many model airfields. Retractable impellers are usually chosen for fast glider models, preferably for aerobatic gliding. This is because the advantages of an impeller drive usually come into play at high model speeds. Altitude is usually gained by accelerating horizontally and then converting kinetic energy into potential energy within a few seconds in parabolic flight.

But what about gliders that are more suited to all-round and thermal applications? Such as the 'Duo Discus', for example? Can a jet-like flying style be achieved with it? I wanted a model that I could use universally: thermals, speed, simple aerobatics. Does it make sense to equip an all-rounder with a retractable impeller instead of a nose drive, and can you even do the installation yourself if necessary?

The choice for this task ultimately fell on the 'Duo Discus' from Wildflug. The model, on a scale of 1:3.75, has a wingspan of 5.33 metres. The model is an old acquaintance, based on the designs of Czech engineer Vagenknecht, and should prove to be an ideal test vehicle. This is because the original 'Duo Discus' is a relatively large aircraft with a high payload and a wingspan of 20 metres. The model is also very voluminous and has a large surface area. This makes it ideal for large battery packs and the retractable impeller, which requires quite a bit of space in the fuselage. Another advantage of this model is that, due to the forward sweep of the wing, the centre of gravity is located only 50 to 55 millimetres from the leading edge in the root area. These are good conditions for a lot of weight in the nose of the fuselage. In addition, the 'Duo Discus' has another interesting feature for impeller applications: with the

small wheel in the nose area, the model can nose down during take-off without being slowed down too much. The retractable impeller reinforces the pitching tendency, as it does not flow directly onto the elevator.

Let's start with the construction of the model. The parts supplied were of good quality. Wildflug delivers good quality. If you want a slightly better surface finish, you just have to do a little more polishing. I painted the fuselage, more on that later. Building the model was a pleasure. Everything fit together right away, the canopy was assembled and painted. I had to make my own bolt fastenings for the spar bridges in the fuselage, as the necessary holes were missing. This is actually a good thing, as it allows the root rib of the wing to be perfectly adjusted and closed. With two helpers, the drilling was done quickly: two people pressed the wings against the fuselage while one drilled the holes. Of course, this can only be done once all the frames have been installed, otherwise it won't fit in the end. The RC components were ordered from Himmlische Höhle, which, as always, offers everything from a single source. The wings offer plenty of space for installing the servos. The KST 'X10' servos used are almost lost in them. The two ailerons on the outer wings are driven by carbon pins from the inner ailerons. Alternatively, servos can of course be installed in the wing tips. The root ribs required a little more work: the gaps to the fuselage had to be filled with thickened epoxy resin. The elevator and rudder were also equipped with KST servos.

Now it was time to install the 'Plus-Jet' retractable impeller with an impressive diameter of 120 millimetres. For its design and selection, I drew on the expertise of CNC-Luftsporttechnik and its owner, Carsten Stumpf. The size of the impeller is a very good compromise and fits perfectly into the fuselage of the 'Duo Discus'.

01 CNC-Luftsporttechnik supplies a sticker as a template for the flap cut-out.

02 The rear frame is inserted at an angle to optimally reinforce the cut-out.

03 The front frame had to be adjusted around the retractable landing gear.





see there that a perfect result requires a lot of experience. If you are unsure, it certainly makes sense to have the installation done by CNC-Luftsporttechnik. Basically, you have to be precise when positioning the diamond cutting disc and then make a continuous cut. Any twisting or jamming will result in a wider gap. And you have to cut into the material at exactly a 90-degree angle. Stop before you reach a corner. The rest is finished with a thin saw blade. This guarantees perfect corners in the gap. In my own attempt – you only get one! – the gap was not quite ideal in one place, so I decided to fill it with filler and paint the fuselage. After this, however, the result was absolutely satisfactory. The mounting frame and the rear stiffening frame are offered by Carsten Stumpf as CNC-milled parts. The stiffening frame is installed at a 45-degree angle to the rear, reinforcing the structure throughout the entire opening area. Once both frames were resin-coated, the impeller could be installed. After installing the impeller, the cover flap was glued to it using spacers. The procedure for this was as follows: insert the impeller, glue on the spacers, use a ruler to measure the strut of the fuselage back, remove approximately two millimetres, saw off and finally glue the flap in place with resin beads.

For the batteries for the retractable impeller, I used two 6s packs with 7,500 milliampere hours and a combined weight of 2,082 grams from Hacker. They were placed in the nose of the fuselage. The design for the impeller is based on a 12s LiPo and approximately 100 amps of current consumption during flight. This is sufficient for climbs of a constant ten metres per second. However, it can be as much as 30 metres per second when you pick up speed in horizontal flight and convert it into altitude. Alternatively, the drive can also handle 14s LiPo



04 The 120-millimetre impeller fits perfectly into the model with a wingspan of 5.33 metres.

05 There is sufficient space in front of the retractable landing gear for the receiver system and the landing gear servos.

06 The entire impeller is supplied as a pre-assembled unit by CNC-Luftsporttechnik.

07 The two 6s batteries for the drive are located at the very front of the fuselage. Together, they weigh just over two kilograms.

08 The cockpit tub had to be shortened slightly, but still allowed for an attractive interior design.

Due to the inlet lip, the effective diameter is slightly larger, which must be taken into account when measuring the fuselage.

However, there was still a lot more work to be done on the fuselage. On my model, the landing gear that had already been installed had to be shortened to make room for the impeller frame. The landing gear servo had to be removed and moved forward. The rear twist pins of the wing, initially designed as a continuous axle, had to be separated and supported.

Cutting out the opening on the fuselage back is a real challenge. This must be done precisely, because the cut-out part will later serve as the closure. The template for this is a sticker. I also got it from CNC-Luftsporttechnik. After determining the position of the mounting frame for the impeller and the resulting front edge of the cut-out, the template was glued on. Carsten Stumpf has excellent videos on his website. You should watch these before you start cutting anything. However, you can also

at 140 amps. I preferred the lighter version here, as the slightest sink should be acceptable for thermal flying in light conditions. Furthermore, the speed of the 'Duo Discus' is limited with the selected profile, which should be taken into account when equipping it with 14s batteries.

The installation of the remaining equipment was then as one would expect from many other models in this size class. I had to make the cockpit tub a little flatter, as otherwise the large batteries would not have fit in the nose of the fuselage. To do this, I simply cut off a two-centimetre-wide strip at the top of the tub and inserted the whole thing with magnets. This created a flexible solution that is sufficient for a nice cockpit conversion. The canopy and canopy frame were already finished and painted at the factory and fit perfectly. For weight and space reasons, I decided not to use a pilot figure.

I was able to set the centre of gravity to 52 millimetres. This was very easy to do by placing the two 2s Lilon receiver batteries, each with a capacity of 1.8 ampere hours. Lead was not necessary.

Now it was time for the maiden flight: after a pleasantly short assembly phase and the pre-flight checks, I was able to make my first take-off. On the first attempt, the model nosedived. On the next attempt, I reduced the motor power during the roll. The model rolled 30 metres on its small front wheel, then the elevator took effect and the 'Duo Discus' took off. The wings could be kept perfectly straight. I was amazed by the thrust of the impeller during climb, which was quite comparable to a conventional nose drive with a small propeller.



For ground take-off, the right wing is placed on the ground.

The original

The 'Duo Discus' is a two-seater high-performance glider manufactured by Schempp-Hirth (Germany). It has been in production since 1993. At the end of March 2010, Schempp-Hirth announced the delivery of the 600th model in the series, and in 2023, the 750th model was delivered. The fuselage was slightly modified for the 'Arcus'. In 2005, the 'Duo Discus X' was introduced. Among other things, it is equipped with wing tip flaps, which enable landings with a significantly steeper approach angle and reduced touchdown speed. The 'Duo Discus XLT' is delivered with a retractable engine.

Photo: Merom, CC BY-SA 3.0 de



The entire maiden flight was free of stall and safe in the turns thanks to the centre of gravity position. The intercept arc was ideal, so I didn't have to change anything. With a centre of gravity of 52 millimetres, there are really no critical stall tendencies in thermal flight. A test relocation of the centre of gravity did not result in any improvement in performance. If you fly the 'Duo Discus' too slowly, it simply drops neutrally. It is a very easy model to fly. This is also supported by the fact that the maiden flight lasted almost an hour, with excellent use of the thermals on that day, climbing to an altitude of 400 metres. I also did not have to optimise or change anything on the rudder deflections. A typical feature of the model is the addition of flaps to the spoilers, which proved to be very effective during landing.

The 'HQ 3/15-12 mod.' profile ensures safety and thermal affinity, but the speed is of course limited. But how useful is the impeller? Well, it actually makes a lot of sense. Let's say

a fellow model flyer flying at the same time finds a thermal beard a kilometre away and you want to join in. All I have to do is extend the impeller, build up some momentum and quickly bridge the gap. Admittedly, the impeller drive with batteries weighs up to 1.5 kilograms more than a comparable FES drive. However, this did not harm the model or its thermal characteristics in any way. On the contrary, acceleration over distance is also an important aspect, and the wing loading of 110 grams/square decimetre suits the model well.

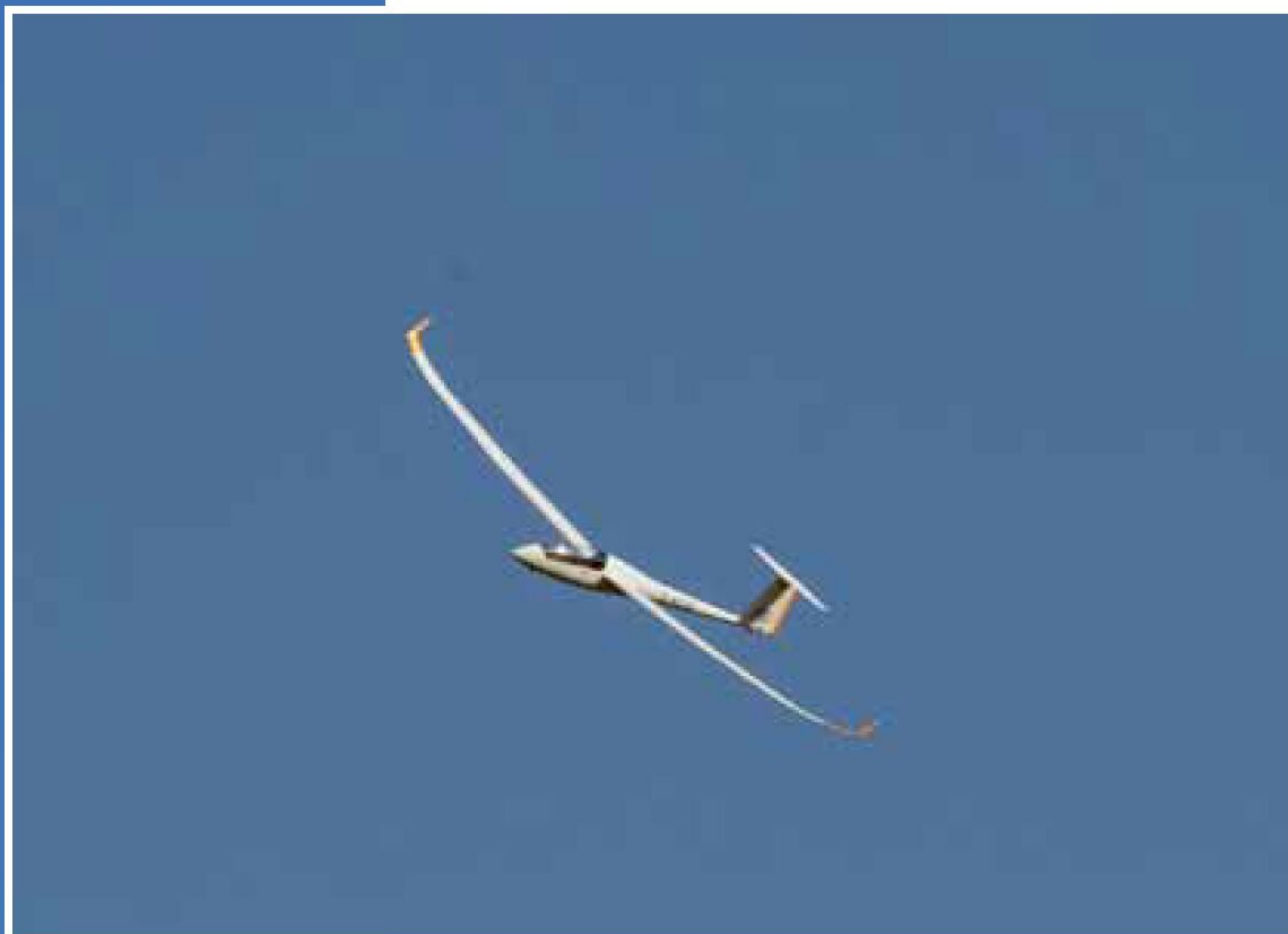
Of course, there are faster and lighter designs for an impeller drive in a large glider. However, the combination here is something special, as it offers good natured aspects with very good manoeuvrability. Apart from the really beautiful flight profile of the 'Duo Discus' with its swept wings, it does exactly what it is supposed to do and what it is known for: it is an all-rounder, sturdy enough, light enough and, for me, fast enough. The noise it makes when powered flight with its voluminous hiss



The model rolls on the nose wheel for the first 30 metres of the acceleration phase.



The flight pattern of the 'Duo Discus' is beautiful. The flight performance and characteristics are also flawless.



FACTS

The Duo Discus from Wildflug
A large glider with impeller drive

Wingspan: 5,330 mm
Length: 2,309 mm
Weight: 12,789 g
Wing area: 109 dm²
Wing loading: 116.3 g/dm²
Centre of gravity: 52 mm
Price: from 2,520 euros

Available from Wildflug,
phone: +49-176/45999333,
www.wildflug.de

is impressive. However, it is not loud. The Duo Discus is quick to assemble and ready for use. The model parts fit easily into a mid-range estate car.

It is a very appealing model, a clear recommendation! The drive from CNC-Luftsporttechnik is also robust, precisely manufactured and effective.

■
Volker Kaul

If you land with the engine extended, you can quickly take off again if necessary.



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WOOD IS WONDERFUL

THE MODERN Balsa Wood Model Aeroplane Kit

In this article, James Hammond takes a look at the modern balsa wood model aeroplane kit, its capabilities, and the elements that go into its design and construction.

Let's begin at the beginning – what do we know about Balsa wood? *Ochroma Pyramidale*, commonly known as the balsa tree, is a large, fast-growing tree. Native to the tropical rainforests of South America, specifically southern Mexico to northern Bolivia, it is also found in the West Indies. It is commonly cultivated in Ecuador, where it is grown in dense plantations. Ecuador supplies over 95 per cent of the world's commercial balsa wood. It is the only member of the genus *Ochroma* within the Silk

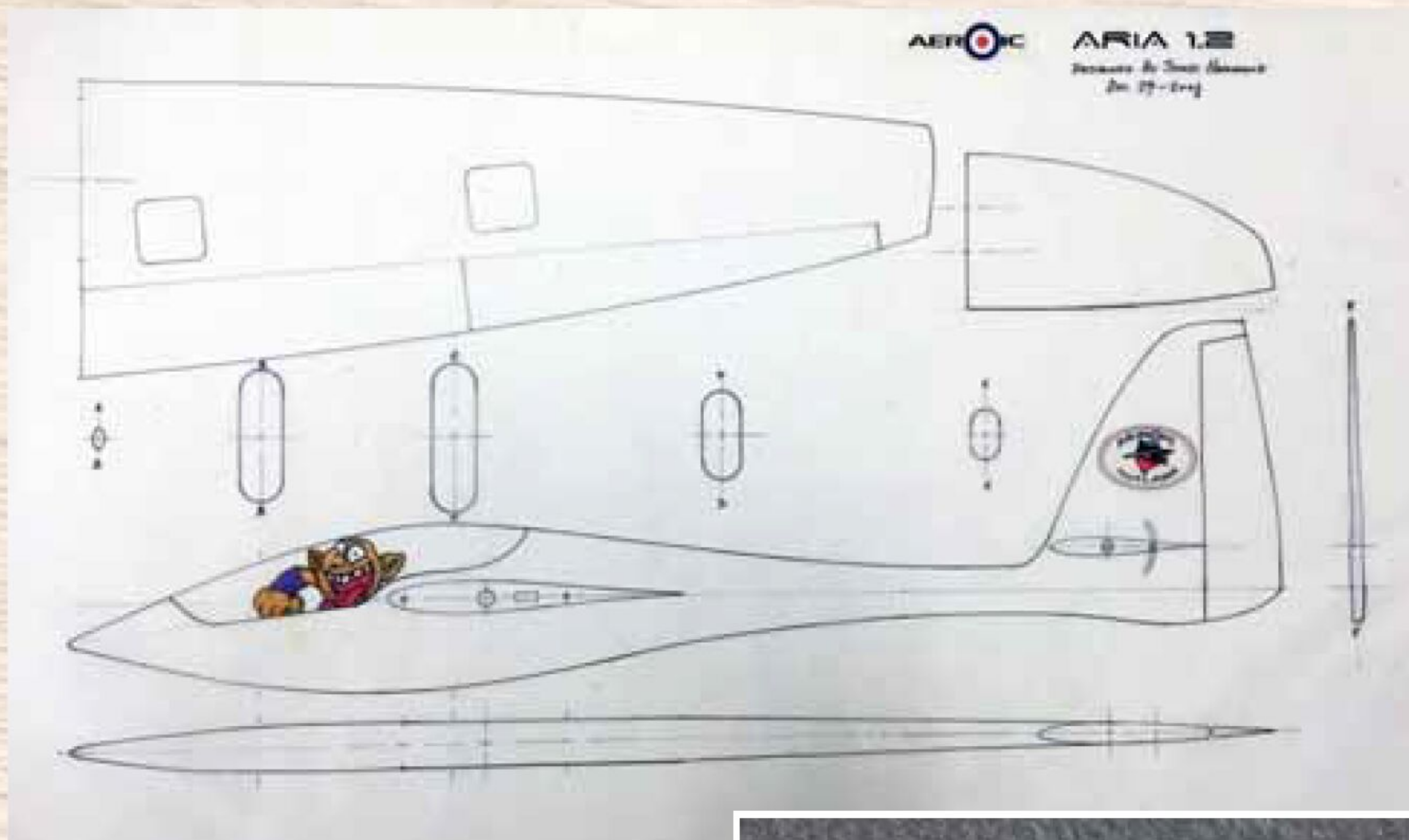
Cotton Subfamily of the Mallow Family, *Malvaceae*. The tree is renowned for its extensive use in woodworking and model making due to its softness and high strength in relation to its low density. The name balsa is the Spanish word for raft and the Portuguese word for ferry.

The first widely available balsa model aeroplane kits were created in the USA by Paul K. Guillow in 1926. Guillow founded Nu Craft Toys (later known as Guillow's) and initially produced aeroplane-themed card games, balsa wood flying models, and gliders. His initial kits, which sold for 10 cents each, featured World War I aircraft such as the Thomas-Morse Scout,

Fokker D.VII, and Sopwith Camel, according to Smithsonian Magazine. Guillows are still in business today. I remember making some of the Guillows models when I was much younger than I am now!

Later in the UK, the now-famous kit company KeilKraft was founded by Keil and Company Ltd, which originally manufactured reproduction furniture in the London area. Led by Edward Keil, who had worked on the De Havilland Mosquito production line during World War II, the company soon shifted its focus. His son, Edward junior, known as "Eddie", conceived the idea of creating balsa wood models after a trip to America and began producing





▲ The original simple 'Aria' outline drawing as provided to Andy.

Two of Angel Wings Designs models – clearly not conventional. ►



simple balsa kits that became immensely popular among boys in the 1950s. I was one of those boys who made my first KeilKraft kit with my father at the age of seven.

Another balsa pioneer worthy of honourable mention is SIG Manufacturing. Based in Des Plaines, Illinois, SIG has been in the hobby since 1951. A highly respected manufacturer of balsa model aeroplanes and parts for almost three-quarters of a century, thousands of beginners and experienced modellers have enjoyed SIG products – including myself.

How about now? Despite the glut of foam and composite models available today, the humble balsa wood model still has a healthy and recently rapidly increasing following. As an indication, the Facebook site of the Angel Wings Designs Builders Group now has over 8,500 members.

To gain insight into what is available in Balsa today – and there is quite a lot – I will examine the thoughts, philosophies, objectives, and

methods of two notable Balsa kit producers who are also good friends: Alien Technologies USA and Angel Wings Designs UK. These companies, although located on different sides of the pond, offer a wide variety of models; interestingly, they also employ markedly different methods and objectives in designing and producing their kits.

Alien Technologies, headed by Red Jensen, is a USA-based, well-known producer of traditional balsa kits inspired by classic models such as the 'Wanderer', 'Sagitta', 'Aquila', and 'Gentle Lady' – all of which are miniaturised yet true-scale representations of the original larger historical balsa models. Traditional signifies that Alien Technologies' model kit offerings, though laser cut, are all faithful to the scale, construction methods, and materials of the originals. For Red Jensen, a man who grew up among classics designed by some very able and famous designers, models that have now all but disappeared, a desire was born not to lose forever but to resurrect and continue the legacy of these beautiful classic planes, but in some attractive and affordable way. Realising that the days of the large balsa model were probably over, Red had the idea to resurrect some of the more notable designs faithfully, but in miniature, easy-to-build and affordable form. "For me, a large part of what I like to design and ultimately kit out are models that inspired me from my youth. Coming from meagre beginnings, some of my designs reflect models that were beyond

my reach, so now I have the opportunity to revisit them. Others played a significant role in my aerodynamic education and subsequent career, and I want to relive that feeling in a new way, often in smaller form", Red underlines. I'm not sure if other designers consider this, but one of the first things I look at when planning to sell something is how to package it! I consider the available box sizes, which often influence the main dimensions of the model. That's innovative thinking, especially with the increasing cost of shipping in recent years.

The Alien Technologies designs, 'Mini Wanderer', 'Micro Sagitta', 'Micro Aquila', and 'Micro Gentle Lady', have all the original lines and

much of the original construction and materials used in their forefathers and are designed to provide a low cost trip back in time for the nostalgic modeller – or maybe for a flyer who wants to extend their skills, try something more challenging and

infinitely more satisfying than a RTF Foam or composite model. Some of the Alien Technologies models can be found at www.alofthobbies.com.

Angel Wings Designs, led by Andy Whitehead, is a thriving producer of Hybrid balsa model kits based in the UK and selling internationally. Andy designs kits and supplies several small models, and while there are a couple of noteworthy traditional kits like the 'Micro Runt', a new take on the old classic 'Ridge Runt', and the 'Gentle Lady', another miniature of a classic, the company's primary focus is on new, innovative, and intriguing Hybrid Balsa designs. A look at the website www.angelwingdesigns.co.uk reveals many more models in a similar vein, with more to come. Later, I will go into detail about one of the new designs in which I played a key role. Andy Whitehead produces several very unusual as well as conventional balsa designs. While some of the models can be described as classic traditional balsa models, Andy focuses much more on new and intriguing concepts. These quirky models are indeed different, but they are well thought out and thoroughly flight-tested. All of them are noted for their enjoyable flying characteristics.

So much for now. In the next issue I will report on the glider model 'Aria' with a wingspan of 1.2 metres, a new hybrid balsa model designed jointly with Angel Wings Designs. ■

James Hammond

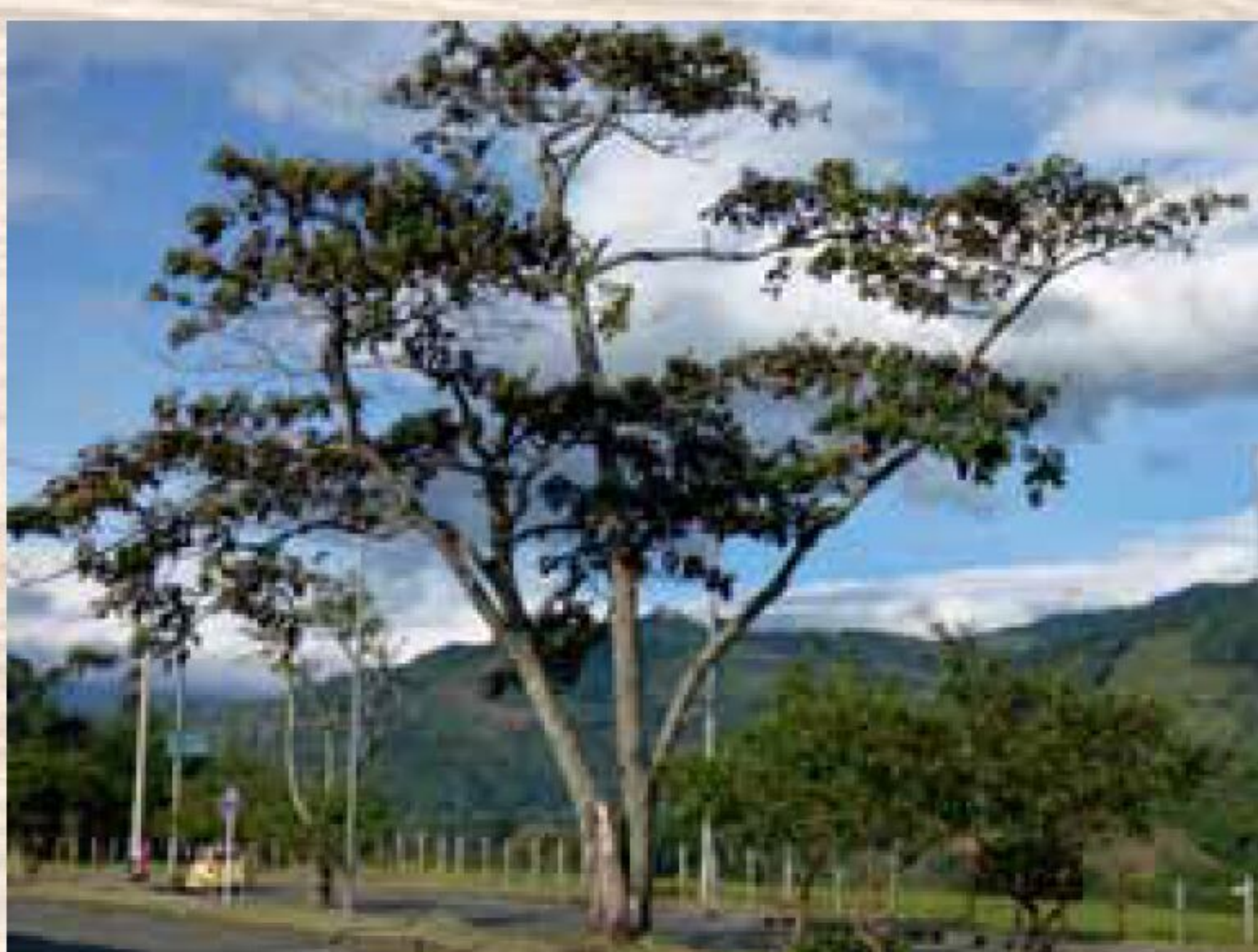


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The balsa wood tree (*Ochroma Pyramidale*).



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The model has some outstanding detailed solutions, such as a separate servo slot on the underside of the fuselage for the elevator and rudder servos, wings that can be attached to the side using a 10 mm CFRP round bar, wing locking using a 'Multilock' and a very high degree of prefabrication overall, especially in our PNP version, as only the required battery, controller and receiver need to be installed. The ARF version is also largely prefabricated and therefore quickly assembled with its own components.



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VISITING AUSTRIA

report



FRIENDSHIP FLY-INN AND PARAGLIDING AT GASTHOF FRIEDBURG

Numerous pilots came from Germany, Austria and Switzerland to take part in the Friendship Fly-in.



The spacious slope gliding site is located directly next to the inn.

The Unterrassner family runs Gasthof Friedburg in Neukirchen am Großvenediger. Model aircraft enthusiasts come from far and wide to combine holidays with their hobby. This also includes well-attended events.

“The slope flying area right next to our Gasthof in the Salzburg region is located above the Salzach Valley. It is spacious and therefore

re ideal for model flying,” reports owner and innkeeper Norbert Unterrassner. The eastern slope is warmed by warm air coming up from the valley early in the morning. The inn is located at an altitude of around 980 metres and also offers a spacious parking area for caravans and motorhomes with panoramic views, as well as rooms and holiday apartments. It is an ideal location for model flying events.

From 11 to 17 May, the first RC paragliding meeting took place on the grounds of the Gasthof Friedburg. The first thermal was already flying at 8:15 in the morning. “The idea for the paragliding meet came about last year,” says Norbert Unterrassner. He knows that many of his guests who bring glider



The panoramic view over the Salzach Valley is magnificent.

models also have a paraglider in their luggage. These are mostly used to probe thermal and updraft conditions. "So why not put the paragliders in the spotlight? After all, where enthusiastic RC glider pilots enjoy the unique backdrop of the Hohe Tauern and Kitzbühel Alps to convert thermals into altitude, the slope is also ideal for an RC paraglider meeting," the organiser was certain. And the success proved him right: for a whole week, pilots and models were in action, showing off all their skills. "There was a colourful variety of canopies and gondolas, from small beginner models to high-performance models with a wingspan of 4.4 metres," Norbert Unterrassner said enthusiastically, announcing: "The second edition of the paragliding meeting will take place from 7 to 13 June 2026."

The big friendship fly-in took place for the third time from 6 to 10 August. The pilots came from Germany, Austria and Switzerland. They were able to enjoy the days in perfect weather. Gerhard Pollack Modellbau presented its new 'Enigma 2' and other models from its range. Rudi Nahm from Cumulus Modellbau brought along the new 'Compass' from NAN. The model, with a wingspan of 4.7 metres, was flown by F5J world champion Lucas Dietrich. Lindinger and Robbe-Modellsport were represented by team pilots Christoph Heider and Klaus Gottsmann. Among other



The paragliders met for the first time at the Gasthof Friedburg.

things, they presented the new 'Scirocco XL' in full CFRP construction with a wingspan of 4.5 metres. On Saturday afternoon, the participants were invited to coffee and cake by restaurateur Norbert and his wife Margret



A wide variety of different models were flown.

Unterrassner. "The fourth edition of the friendship fly-in is now scheduled for 5 to 9 August," announced organiser Dieter Huke afterwards.

Editorial team



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Steel wires
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UNKNOWN BEAUTY

A REPLICA OF THE LOMMATZSCH 'LIBELLE LOM 57/1'

FACTS

Lommatzsch 'Libelle LOM 57/1'

A large glider built by the owner

Wingspan: 5.5 m

Length: 2.2 m

Weight: 10.6 kg



Little is known about the gliders built in the former GDR. The development of the Lommatzsch 'Libelle' from 1955 onwards was aimed at competitive sport. Hans-Peter Haase has built a replica of this extraordinary aircraft.

When people talk about gliding events involving 'the Libelle' today, most only have the image of the 'Libelle H-301' with glass wings in their minds. Unfortunately, the Lommatzsch 'Libellen' are not very well known. The short period of glider construction in the former GDR is probably the reason why the aircraft are not so well known. Several examples are on display and described in the gliding museum on the Wasserkuppe.



The Lommatzsch 'Libelle LOM 57/1' was built in the former GDR from 1955.

My love for the Lommatzsch 'Libelle LOM 57/1' began in the 1970s at the gliding airfield in Gardelegen. What was supposed to be the last flight of the day, from the launch site to the hangar, turned into a two-hour flight in the evening

thermals. I can still remember the view of the city in the evening light. Since that day, I have wanted to build a model of this 'Libelle'. Fifty years later, my wish came true: I spent several years collecting material about the aircraft. Then came the first



01 The wings were built on two aluminium tubes.



02 The wing was constructed in the classic ribbed design, here the outer wing with the aileron.



03 The curved canopy gives the model its typical appearance.

04 The front part of the fuselage was made removable, just like the original.

drawings and designs for a 1:4 scale model. It was to be built in the classic wooden construction style with self-milled parts. In the summer of 2018, I met up with a friend again after 40 years. The former free flight athlete and three other comrades had also dedicated themselves to the Lommatzsch 'Libelle' and had already completed their first models. With a lot of dedication and effort, they had built a fuselage shape on a scale of 1:3. I was able to obtain a fuselage complete with canopy from the FSTM GmbH workshop in Meissen (contact: werkstatt@fstm.eu).

However, due to the 1:3 scale, I now had to start my design from scratch. I used the 'LOM 57/1', the so-called 'long ear' with a wingspan of 16.5 metres, as a model. Now began a long process of drawing for the model with a wingspan of 5.5 metres. I chose the 'HQ 2.5-12' as the wing profile and the 'Naca 0009' for the horizontal stabiliser. The wing halves were divided again for easier transport. After more than 250 hours of design work, I was able to mill the first parts.

The GRP fuselage offers plenty of space for the fittings. It is so stable that no frames are needed in the fuselage. I only glued a CFRP tube in the area of the wing joint. This provides the necessary pressure stability in the wing area. A wheel well is already laminated in for the fixed main landing gear. A wheel with a diameter of 100 millimetres can be used here. There is enough space on the side for the axle bearing. The wheel well also does a very good job of preventing grass and dirt from getting into the fuselage.

My goal was to be able to fly the 'Libelle' at any time without having to rely on a tow model. I quickly dismissed the idea of a motor dome

above the wings. The same went for a retractable engine. That left only the option of installing it in the nose of the fuselage. However, the nose of the 'Libelle' is not as slim as that of more modern gliders. So I needed a solution without a spinner. I had an outrunner motor with a diameter of 42 millimetres and 380 kv ready, which is designed for 8s LiPo batteries for a 13 x 7 inch three-bladed propeller. This motor now found its place in the nose of the fuselage. The motor shaft is flush with the nose of the fuselage and the propeller mount is clamped to the shaft with a sleeve. It can be loosened with an M5 nut.

The entire upper part of the front fuselage can be removed on the original to access the rudder pedals and instruments. This was probably the trickiest task on the fuselage: a thin cutting disc (0.5 mm) was used to cut along a marked line. I then constructed a frame that also has the closure for the canopy. The drive batteries, motor, controller and tow coupling are now easily accessible through this opening. A painter friend of mine then took care of the painting for me.

I drew the wing ribs in the program and numbered them right away to avoid confusion later on. The first root ribs were still made of 3 mm poplar plywood, but this proved not to be robust and warp-resistant enough. At least I was able to determine that all the recesses and drill holes fit. They were finally milled again from 3 mm birch plywood in aircraft construction quality. This allowed the construction of the wings to begin on a tubular jig. I had already taken the holes for the jig tubes into account when drawing. The construction of the first inner wing section was followed by the first outer section

and the stress of whether all the plug connections of the wing division would fit exactly. The plug-in tubes at the root and at the separation of the wing sections are all stored directly in the milled holes of the plywood ribs. This has proven itself over many years. The wing was only planked from the leading edge to the main spar. The trailing edge proved to be a real challenge. The HQ profile requires a pointed taper in the trailing edge. With an abachi strip, reinforcement triangles on each rib and a lot of sanding, I was able to work out the HQ profile well. Homemade M6 aluminium knurled screws were used to secure the wings to the fuselage. The turned parts with M6 internal threads were glued into the root ribs. The outer parts of the wings are secured with adhesive tape.

The 'Libelle' has no wing fairing moulding on the fuselage. However, the outer curve of the fuselage had to be incorporated into the root rib with glued-on balsa. This required several hours of sanding work, as there is no uniform radius over the entire length of the root rib. The 'Langohr' was only equipped with ailerons and spoilers. KST 'X10' servos are used to control the ailerons. The aileron pivot axis is a 3 mm CFRP tube. The three bearing points were milled into the ribs, resulting in a play-free bearing. The tube can simply be pulled out to remove the aileron. The electric spoilers are from D-Power and, at 44 centimetres in length, provide sufficient braking effect. Finally, I covered the wings with iron-on film.

The tailplane has a six-degree V-shape on each side, which of course had to be taken into account in the design with a straight spacer tube. The profile of the root rib was thickened until the holes in the ribs could be marked with sufficient material all around. I installed a KST 'X12-508' servo in each half of the tailplane. Due to the thick profile at the root, the rudder linkage still fit into the hollow groove. The pivot axis is a CFRP rod with a diameter of two



05 There is sufficient space for the motor and batteries in the front section of the fuselage.



06 The large rudder is mounted on a continuous pivot axis.



07 Only the motor shaft protrudes from the front, so the shape of the fuselage nose remains unchanged.



08 Another striking detail is the tailplane with a six-degree V-shape on each side.

09 The rudder servo is on a self-made rocker. This allows the ropes of the linkage to be re-tensioned.

10 The connection of the tailplane to the fuselage was designed with a thickened root rib.

the centre of gravity, only 200 grams of trim weight were needed in the nose of the fuselage. The scales finally showed a total weight of 10.6 kilograms. Considering the enormous size of the model, this is very light.

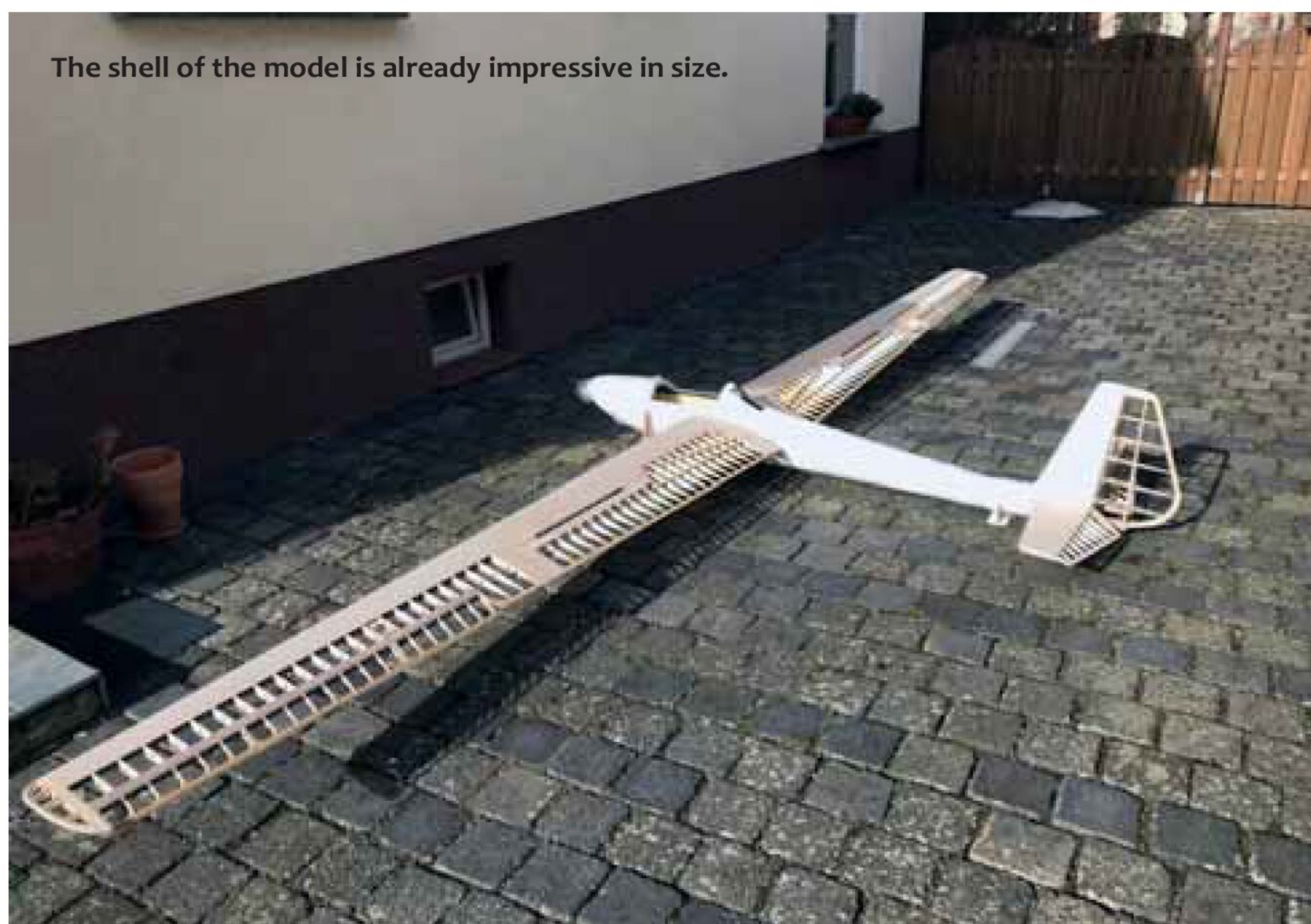
Unfortunately, no tow plane was available on the day of the maiden flight. So the first launch had to be done under its own power. So, rudder check, engine test, full engine power and go! The

millimetres. The horizontal tailplane and rudder were again constructed using the classic spar-rib construction method. While the tailplane is planked, the control surfaces were constructed with balsa spars and hollow trailing edges and covered with iron-on film.

The vertical stabiliser was moulded directly onto the GRP fuselage. My work therefore involved constructing the strut in the damping fin in the fuselage and constructing the rudder. This was also mounted in a hollow groove. The

distinctive curved shape of the trailing edge was achieved with several milled parts with corresponding shafts. A 3 mm CFRP rod serves as the pivot axis. The rudder servo is located in the fuselage and was placed under the wing plug. 1 mm stainless steel cables are used for the linkage. The servo mount itself was designed as a rocker. This allows me to retighten the cable linkage using a screw.

I checked the weight repeatedly during the construction of the entire model. After weighing



The shell of the model is already impressive in size.



The ground take-off was already practised during the first flight.



taxiing speed slowly increased and the ‘Libelle’ took off much earlier than expected. The vario-meter showed a climb rate of three metres per second. At an altitude of 200 metres, the engine was stopped. After a few trim steps, the ‘Libelle’ flew straight ahead and willingly followed the control commands. Only the elevator deflection was still too large and was halved for the second flight. With a flyover and another climb, the tension gave way to a feeling of happiness.

With the selected drive, the Libelle climbs a maximum of five metres per second. The 8s flight battery with a capacity of five ampere hours allows for three climbs to an altitude of 300 metres each. Since its successful maiden flight, the Libelle has completed well over 50 hours of flight time and performed many ground launches on the main landing gear. The F-tows were also uncomplicated. Even a ‘Piper’ with a 38 cc engine was perfectly adequate for towing.

I have fulfilled my childhood dream and have often simulated the evening landing approach of the original ‘Libelle’ mentioned at the beginning. The picture is the same and the joy of this successful construction is enormous. ■

Hans-Peter Haase

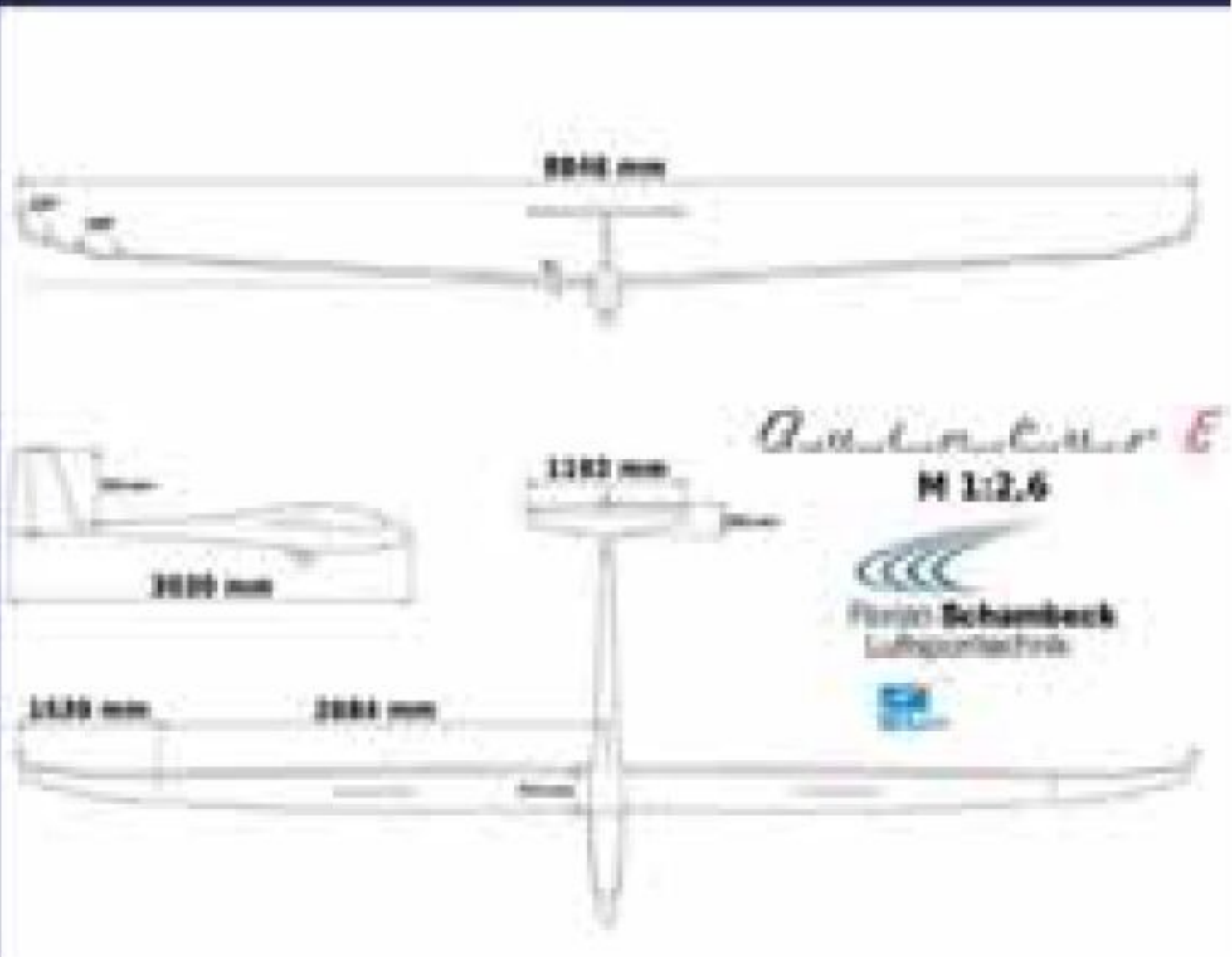
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F3B SCENE

report

THE 24TH WORLD CHAMPIONSHIP WAS A FESTIVAL



F3B is a competitive sport. Here, Thomas Gruber launches Theo Weberschock's 'Device'.

Anyone who was at the airfield in Nardt (Germany) from 9 to 16 August will probably remember it with a big smile. The 24th edition of the F3B World Championship was a major event in model flying. Martin Weberschock was there for AUFWIND.

After the 2023 World Championships in Denmark, this was the fourth time that the F3B World Championships had been held in

Germany. The teams from Australia, Chile, the USA and Japan had the most complicated journeys. To save them having to transport heavy winches to Germany, we as hosts provided our own winches, thus reducing the effort required for everyone to the bare minimum.

The event team, consisting of Peter Hubbertz, Reinhard Dylla, Reinhold Krischke,

Roland Pietsch and Armin Hartzitz, can hardly be surpassed in terms of World Championship experience. We noticed the passion with which this World Championship was prepared from the first to the last minute! A great F3B World Championship already took place in Nardt in 2013. This event was perhaps surpassed because the pilots, helpers and organisers have got to know each other very well over the years.



Andreas Herrig became world champion in 2025.



F3B is a team sport: pilot, tactician, co-pilot and team manager – everyone has a say.



INFO

F3B is the oldest internationally flown competition class for rc gliders. Four tasks are required: high-start with a winch, time flight with target landing, distance flight and speed flight.

F3B is fast and exciting.

Jens Buchert, who finished second, was tireless in his work.



Team Japan: Naoto Sakurai flew to 10th place in the overall standings.

After the preliminary competition, a fantastic model flying show took place on Sunday with model flying enthusiasts from the region, which was attended by many spectators. At the official opening ceremony, the pilots from 13 nations were welcomed once again. And then the eight heated rounds of the World Championship began. At this championship, the individual nations were able to bring three wildcard pilots in addition to their usual three pilots. This meant that 43 pilots flew the time, distance and speed tasks. Steffen Besemer and Matthias Neumann, along with Jan Hansen from Denmark, are the few F3B model builders. The servos used were mostly KST 'X10' and MKS "HBL6625" and 'HV6150' installed in the wings.

The week began with perfect weather. In contrast to the rain and wind at the previous F3K World Championship in Tarp, Nardt challenged the pilots with very summery temperatures and extremely little wind. The preliminary competition was already exciting with three complete rounds flown, which is rare before such a world championship. Andreas Herrig (Germany) already showed his dominance here, as he won ahead of Thomas Kiesling (USA) and Herman Stahl (Sweden).

This was no easy feat in the weak wind conditions. Wind launches are much easier in windy conditions, but in calm conditions the model's

setup must be optimal in order to achieve the best heights with electric motors. The pilots' performances were exceptionally high and the point differences were relatively small in the end.

The Australian team, for example, was a real pleasure to watch: true gentlemen, whom we already got to know in Denmark in 2023. Thomas Merzhäuser from Munich supported the team again, and the joy of F3B flying was evident every minute on the airfield. The team from Chile was supported by Markus Wanner and Pascal Mestermann. The German wildcard pilots Steffen Hoppe and Armin Hartzitz flew together with the American national team. The Dutch team flew together with Thomas Kübler from Switzerland. Marc Mölter and Andy Heindrichs from Belgium flew together with Christian Pinoteau from France. Perhaps this shows that we model flyers pull together when necessary.

In addition to flying, there was also a lot of communication in the large team tent. Another new development was the interest

AUF EINEN BLICK

Pos.	Pilot	Country	Model	RC system
1.	Andreas Herrig	GER	„Freestyler 6“	Graupner, „MX20“
2.	Jens Buchert	GER	„Freestyler 7“	Jeti, „DS12“
3.	Jürgen Pölzl	AUT	„Pike Precision 2“	Futaba, „FX30“
4.	Steffen Besemer	GER	„FS 3 Sp.“	Graupner, „mc 32“
5.	Petr Fusek	CZE	„Freestyler 7“	Jeti, „DC24 II“
6.	Armin Hartzitz	GER	„Freestyler 6“	Jeti, „DS12“
7.	Herman Stahl	SWE	„Freestyler 6“	Futaba
8.	Frits Donker Duyvis	NED	„Device“	Jeti, „DC24 II“
9.	Matthias Neumann	GER	„Gadget/Shooter“	Jeti, „DS14“
10.	Naoto Sakurai	JPN	„Freestyler 7“	JR, „TX T44“

shown by the media: MDR Sachsen broadcast two reports on television during the week and the World Championship was also covered on the radio. The feedback from the broadcaster was: 'It's extraordinary that such a marginal sport generates so much attention on social media.'

In the end, Andreas Herrig became world champion. He had started the preliminary competition with the new 'Freestyler 7', but then switched to the previous model, the 'Freestyler 6'. Jens Buchert, who came second, flew his 'Freestyler 7' with his own connector with a more V-shaped profile. Jürgen Pölzl from Austria came third, flying a 'Pike Precision 2'. In the youth category, Theo Weberschock (Germany) took first place and 24th place in the overall standings, followed by Ondra Behensky (Czechia), who finished 29th in the overall standings. In the team standings, Germany took first place with 61,611 points, ahead of Austria (59,790) and Czechia (59,550). Denmark (59,158), the USA (57,757), Japan (57,222), Sweden (56,931), the Netherlands (56,923), Australia (50,704) and Chile (49,624) followed in the remaining places.

In short, it was a world championship for a large model sport family! Anyone interested in flying in the F3B class is welcome to get in touch! If you are a team player and have an F3B model, you are welcome to take part in an F3B competition.

Martin Weberschock



The F3B World Championship was also a week-long model flying camp: living, repairing, flying.



Andreas Herrig became world champion, winning ahead of Jens Buchert and Jürgen Pölzl.



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THE PREMIERE

THE FIRST WORLD CHAMPIONSHIP OF THE GPS LIGHT CLASS

The first GPS Light Class World Championship took place in southern Germany from 24 to 27 July. 36 pilots from eleven countries took part. Among them was Iain Rose-Medley from Great Britain.

Attending and competing in this event was a pleasure and privilege. Many of the 36 pilots know each other from other classes and events and the common theme for all was to have a good time and enjoy this most challenging glider sport. It was one of the best organised and supported events I have

ever seen. The great event was organised by a club of 25 members. Almost all of the support came from the wives and family members. The on-site catering started at 10am and ended with dinner at the local community hall. The sponsorship from Samba Models, CHA-Servo, Dähn Estate Agents, Carbon-Pult, the local mayor and councillors and the support from the German Model Flying Association must also be acknowledged.

GPS Light Class is predicated on the idea that F5J, F3J and many other thermal planes under

4m can be used. So long as the surface loading is between 12 – 30 g/dm², the span is between 2,700 and 4,000 mm and the AUW stays below 3000g you can fly it. I suspect many glider pilots worldwide have a suitable plane and could easily adapt it to fit in the avionics required. As a refresher: In Light Class the triangle points are 200 m away from the mid-point of the triangle's hypotenuse. The maximum height, and speed, a glider can have as it crosses the start line in Light Class is 250 m, and 70 km/h. Exceeding these attracts penalty points unless you restart. This class also has a maximum



Philip Kolb took second place in the overall standings with his 'Prestige 3pk'.



The row of tripods with tablets, smartphones and GPS technology are the hallmark of GPS competitions.



Emanuel Dähn won the first GPS Light Class World Championship. He flew a 'Prestige 2pk' from Samba Models.

height limit of 350 m, fly over that and your score is zero. Finally, each group has a defined entry window and entering before or after that window results in a zero score for your twenty-minute flight.

Practice day for me, and a few others, was an opportunity to fly a personal best and put in at least one other high lap flight. In all five of us managed between 18 and 21 laps of the course - that is 18 to 21 km plus in 20 minutes with an F5J glider. Average flight speed is around 60 km/h with some laps taking just over 40 seconds for a KM. However, as we were making laps whilst the sun shone, we were all hoping for some better news for the rest of the week. Everyone had consulted a myriad of weather forecasts and knew that the coming days did not promise clear sky and abundant thermals!

Day one dawned and rain/low cloud and gloom seemed to be the order of the day. Luckily the opening ceremony and some excellent coffee, cake and assorted snacks diverted the pilot's attention. Amazingly after a 1pm starts to flying we had two and a three-quarter full heat completed by the end of the first afternoon. Looking at the placings at the end of the it was surprising to see some of the well-established and very gifted pilots had suffered in the conditions. Early Heats saw buoyant but weak air. Forcing pilots to assess when to enter the course and how to fly the task. Thermal turning and not gaining height when others are flying an accurate course and using

the buoyant air to maximise glide angle and dolphin fly often leads to the same number of laps in these weaker conditions. Often the pilot who chooses to just cover distance will get a better score because they will have attained a higher average speed for the six or seven laps that are typical in these conditions. It is a difficult pilot decision, because if you do choose to loiter, circling but not really gaining, and thermal does develop. Suddenly that can become the wining move. However, if the thermal gives very little climb, then the result is a slower average speed or possibly even the loss of a lap. In Group B of Heat 1 this became the case and the thermal activity improved to allow higher laps scores, and more importantly add to the tactical options open to pilots.

In GPS Triangle competition the task starts with an entry window. For this event, with the number of competitors per Heat the entry window was 7 minutes (and 59 seconds). Entering for an attempt as the entry window opens is worth doing, because if that is the beginning of a thermal cycle it will maximise the opportunity to use good air. Entering at the end of the window offers pilots the advantage that they can see how everyone else is doing. They can also use the extra aircraft that are airborne as a distraction – and then fly off to the thermal that no one else has seen. There are many more tactical options in between... including the one that allows you to ignore everyone else and do what you think is the best set of decisions that give the best flight you can possibly do in the conditions.

If you have never seen GPS Triangle competitions the fascination for pilots in this sport is the way to make good scores in all conditions. Being able to stay airborne for the full flight is the first challenge, and probably the easiest to meet. The next challenge is adding the ability

to to make progress around the course. From that point the decisions on how to get the most laps using the lift in the best way possibly becomes fascinating. Where to fly, how high to take a thermal, is the lift off the course, and so many other questions need to be answered during the flight.

Back to Heudorf: As day one continued the maximum laps per heat increased and some early indications showed that the racing was going to be close. It also showed how easy it was for slightly inaccurate flying or one less than perfect decision to severely impact a pilot's score. Day two gave us another chance to try more performance enhancing cake, savoury snacks and coffee. The clagg cleared at 14:00 hrs and I was up. Unfortunately, this was for my worst fight of the event and this would become my discard. Entering the course two minutes after the winner with a relatively poor start height left me too low and not in the right place to contact the only thermal of this round. When you choose to start your attempt is another tactical choice pilots need to make. In this championship there were a few flight groups where one minute late, or one minute early for that matter, could make a huge difference to the outcome. Too early and you would miss the thermal that gave the winner their advantage – because the lift wasn't formed when your glider passed. When you see this lift and fly your plane around the course to contact the lift you then find the lift has moved and is no longer in reach. This can lead to pilots making the decision to chase the thermal and not the turn point. Completing turn point three and flying off towards turn point two in search of the only lift seems counterintuitive. However, being in the air at 290m height with 500m distance to fly back to turn one is a better position to be in than having your plane on the ground because you flew to turn one and missed the lift.

Conditions were challenging and chasing weak thermals over the forests surrounding the flying field was the only way to get a reasonable score. Once again, where you started your attempt in the start window was often crucial. Also spotting even the weakest lift early was key to success, because of the direction the lift was moving in relation to the defined course. It was key to get to the thermals as far upwind as possible because they were not strong enough to be worth following downwind from the triangle.

Heat 5 was a good flight in terms of my flying. A good start at 246m and 49kmh. I picked the best air around the laps by flying to feel and observation. Unfortunately, that pesky Philip Kolb was able to use a thermal that popped off a few seconds after my plane passed the spot. By the time I had flown the 996m around the lap to where he was circling - it was gone. Even though this was my other bad flight I was one of eight pilots that Philip properly bettered. The winning flight looked like this: <https://www.rcmodelspot.com/Ranking/Flight/4840b02c-84d5-44e7-8a01-a39d174cda07/1>

Day three. Heat 6 was one of those that the local flyers recognised. They say it is like having two elephants on your wings. Once again



The top three finishers (from left): Philip Kolb (Germany; 6,950 points), Emanuel Dähn (Germany; 6,998 points) and Hansgeorg Siegenthaler (Switzerland; 6,504 points).

for me a really good start for my flight, but the air was brutal. Everyone looked to be on for two laps at best even for GPS legend Dani Aeberli of Chocofly. We were all schooled by Jaroslav Vostrel from Samba who somehow squeaked in three laps! I got the plane on the landing strip but many had to set off for long walks into the surrounding farm land in this

group. This was one of the few groups where the lap count was very low. In these conditions the right decisions of when to fly and how to fly the flight are critical. Often experience in F5J helps, and certainly reading the air well is crucial. Dropping one lap in these low lap groups really damages your score.

Heat 7 was another where there was not enough lift to warrant circling for the first two groups to fly - but: pick the wrong speed; pick the wrong part of the sky; or try to be a hero; and you were going to be punished. As this heat developed the thermal activity improved and there were some excellent displays of thermaling downwind away from the course and judging the right moment to fly forward



The members of the host club were constantly active and highly motivated.



The Heudorf ice cream van was also very popular.

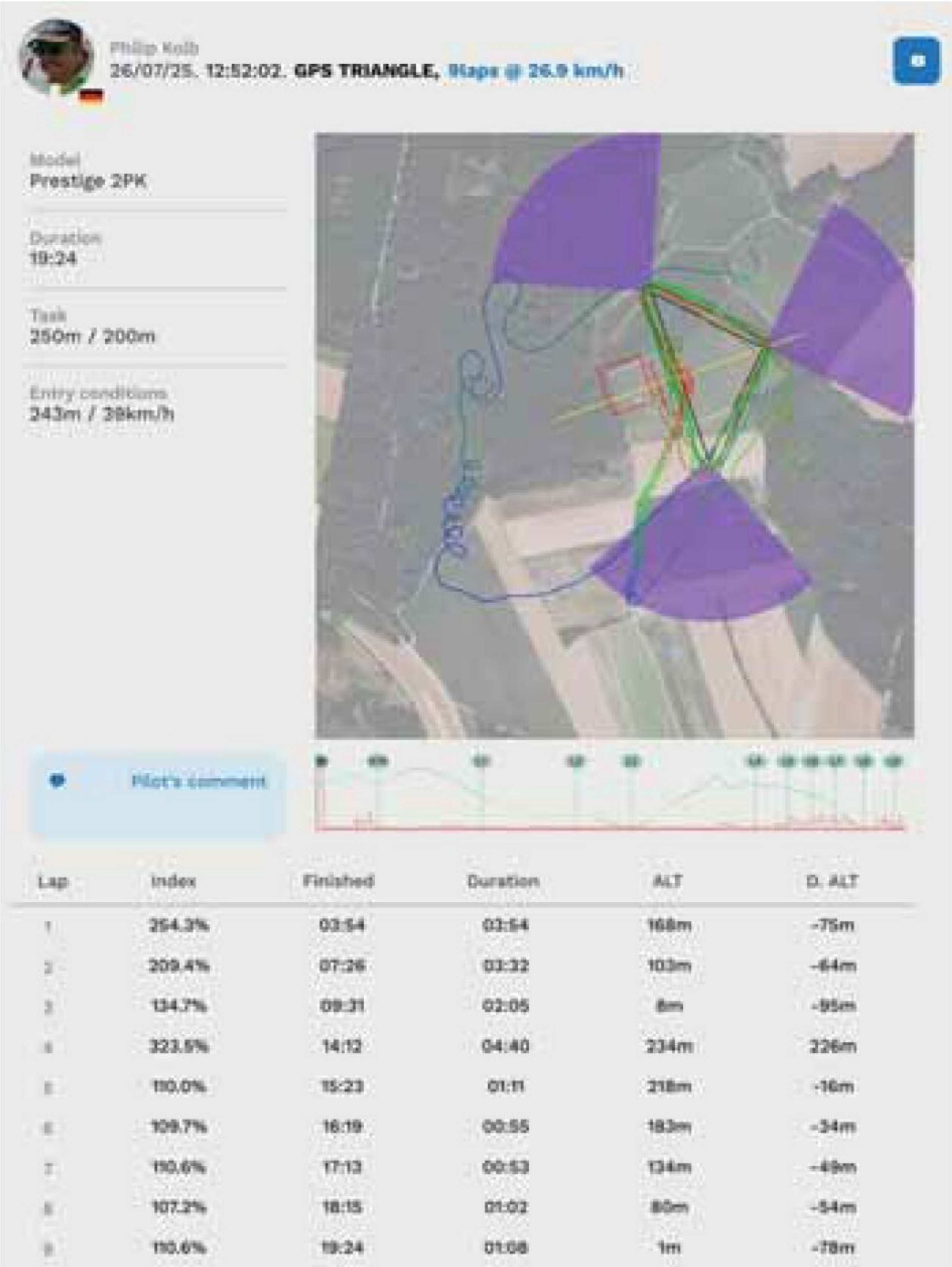


The club's catering was varied, always surprising and offered excellent quality and variety.



The airfield is located just a few kilometres north of Lake Constance.

The handcrafted trophies attracted a lot of attention.



An outstanding flight by Philip Kolb (left): he crossed the start-finish line in lap 3 at a height of eight metres. There were thermals! Climbing to over 300 metres and good air in rounds 4 and 5 brought him nine rounds.

Damien Ytier had lost 122 metres in the first round. After the second turning point, he climbed to within a few metres of the altitude limit. On lap 5, he fought for a small gain in altitude. This was enough to secure the 6th lap.



and make some laps. Once again, the soaring skills required for GPS Triangle flying are judging the strength of thermals, assessing the height gain versus the distance that height gives you. How many laps each thermal will give you and how to use any good air on the course are very different skills to those required to 'simply' stay in the air.

Having started the competition in the first group of the first heat it felt like I might be ending the competition in the last group of the last heat... Before the arrival of some hefty rain, thunder and lightning I got to fly against the World Champion elect, the bronze medallist, and the pilots. in fourth eighth and tenth place. Being on par or beating all but the podium pilots was a good way to finish the day. The difference between the winner and me - probably three clicks of down trim and shaving 45 m off the 5,746 m the plane flew – so 0.8 per cent!

Day four. Despite the Competition Directors best attempts the 9:00 hrs start was delayed until 10:30 hrs due to low cloud. Although



Television crews and press representatives visited the event and reported in detail.

done. Some fun flying and some display flying by members of the local club followed. Closing ceremonies and prize giving was handled between 15:30 and 16:30. By this time the sky had turned very black! As goodbyes were being made the hail, thunder, lightning and then torrential rain broke upon us.

Emanuel Dähn became world champion with 6,998 points ahead of Philip Kolb (6.950 points) and Hg Siegenthaler with 6,504 points. A total of exactly 1,459 triangles were flown in 281 flights, covering a total distance of 1,409 kilometres. ■

Iain Rose

Photos: Iain Rose, Jaroslav Vostrel, MFV Heudorf



John Copeland from Australia had the longest journey to the GPS Light World Championships. He finished 18th in the overall standings with 5,485 points.

it cleared and a test flight showed enough height – by the time the first round of Heat 9 had launched the cloud had dropped to 250 m or less. We then waited. We then consumed more cake, savoury snacks, coffee and then lunch as the convection induced rain and cloud toyed with our emotions. As 11:30 hrs passed so too did the time available to complete another full Heat and therefore the competition was finished.

Inevitably the sky cleared at about midday and some flying for the local TV stations was

“A fantastic event!”

It all started at a GPS Light competition last year with the question of whether the model aircraft enthusiasts in Heudorf could imagine hosting a world championship. Over the autumn and winter, the idea became more concrete and, after many discussions, the planning began. As a small club with around 25 members, it was necessary to draw up a basic plan. The further the planning progressed; the more points were added. These ranged from the distribution of tasks and legal issues such as flight permits to the allocation of space at the airfield for pilots, visitor parking and camping, as well as catering and sanitary facilities. Contact was also sought with the press and politicians in order to achieve the greatest possible acceptance among the population with regard to model flying and the promotion of young talent. To this end, the Heudorfers used project planning software to keep track of well over 200 points. Each participant had access to the tool and could independently tick off items that had already been completed, so that everyone knew what still needed to be done. One major issue, if not the most important one, was providing food and washing facilities for the pilots for just under a week. As the site did not have the necessary infrastructure, the Heudorf community centre was used, where dinners were also held and shower containers were set up. A shuttle service was provided for the approximately two-kilometre journey. Then there was the search for sponsors, booking the famous Heudorf ice cream van and preparing the site. It was also necessary to consider what to do in case of inclement weather. And by when did the festival and dining tents need to be booked? The number of questions seemed endless at first. However, with precise planning and teamwork, an incredibly enjoyable world championship was organised, with constant surprises for the pilots! Appetiser platters were served right at the briefing. And this continued throughout the week! The meal planning proved to be very practical. For a daily flat rate of 23 euros, all-inclusive catering was offered, with the exception of drinks. On the one hand, this makes planning easier for the organisers, and on the other hand, it means that each snack does not have to be charged individually. Not only barbecue food, but also vegetable sticks with dip or sweet treats in jars. Everything was organised and prepared by the club members themselves. But even small and subtle details such as handcrafted and laser-cut trophies in the shape of the model aircraft used in the competition, as well as trophies for the best index or fastest lap, brought smiles to the pilots' faces. Great importance was attached to good public relations. Television crews and several press representatives visited over the three days. Interviews were conducted and many articles were published. Local politicians also showed their support for the promotion and importance of model flying during the opening ceremony and the award ceremony. Several visitors dropped by spontaneously after hearing a report on the radio or reading about it in the newspaper. We would like to thank the members of MFV Heudorf, the pilots' wives for the perfect catering, as well as the helpers and everyone involved in putting together this fantastic event. We will certainly remember it for a long time to come.

Benjamin Dähn

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PRO TIP #9

Wood moisture is a decisive factor in the technological and mechanical properties of wood. Moisture is also an important factor in the processing of balsa wood. This is because balsa wood that is too dry or too moist becomes brittle and breaks when bent even slightly. Components can also crack during processing. Balsa wood should therefore be stored in a place with controlled humidity in order to retain its ideal properties for modelling. After a longer storage period in a heated, dry room, the only remedy is to moisten the component and process it further with dispersion glue. In moderately heated interior rooms, a moisture content of around eleven per cent can be achieved. In buildings with central heating and, in particular, underfloor heating, values of less than ten per cent are achieved. A rule of thumb says that freshly sawn timber must be stored for one year per centimetre of wood thickness until it is suitable for use in model making. If damp wood is dried, it also loses some of its volume and shrinks. Furthermore, the wood inside the tree shrinks less than the wood on the outside, as the heartwood is harder. With balsa wood, these values are somewhat higher than with other types of wood due to the extremely high water content.

Editorial team

AVIATIONTOYS.NL

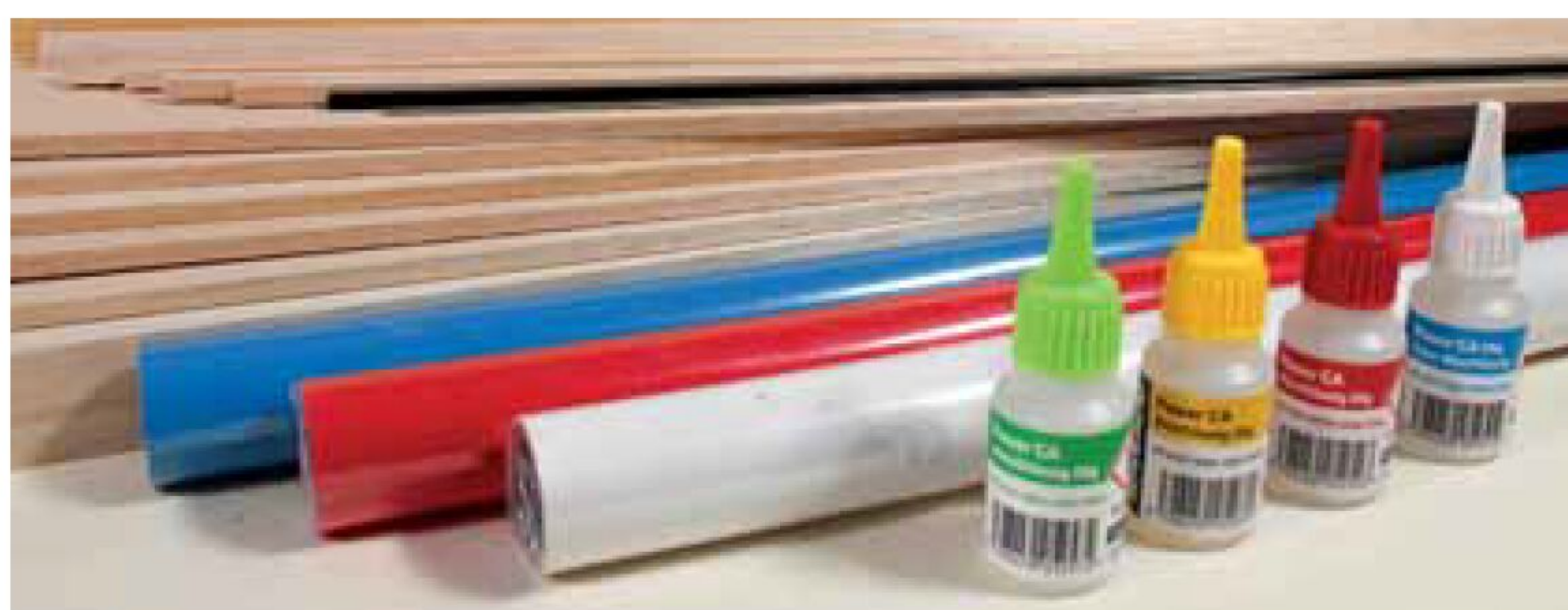
Passion & Fun

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QUICK TO BUILD, FAST TO FLY

THE 'FLIXX' ELECTRIC GLIDER FROM AERONAUT

With the 'Flixx', Aeronaut has a speedy, fun model in its range that is great to fly with a wingspan of just under 1.7 metres and is enjoyable to build. Milan Lulic built and flew the model.

The 'Flixx', with a wingspan of 1,680 millimetres and split wings, is constructed using conventional woodworking techniques from laser-cut wooden parts. A 28 mm motor and a 3s LiPo battery provide the power. Aeronaut continues to focus on traditional wood model building – which is very pleasing. Thanks to its box fuselage and ribbed wings, the 'Flixx' can be built in just a few evenings.

It quickly becomes apparent that this is a wooden kit of remarkable quality. The exemplary building instructions on high-quality paper with 26 construction stages, including colour-illustrated perspective drawings,





01 The kit is very neatly manufactured and the assembly instructions with their 3D drawings should leave no questions unanswered.

02 The drive set recommended by Aeronaut gives the model enough power for lots of flying fun.

03 Thanks to the good fit, the tail units were also quick to assemble.

04 The servos are mounted directly on the servo cover using small wooden blocks.

05 The wing is constructed using a well-designed, quick-to-build rib construction method.

deserve special recognition. The sophisticated plug-in construction makes assembly easy and virtually eliminates construction errors. The assembly instructions include a detailed parts list with the position numbers of all components. These are sorted according to the assembly's 'F' (wing), 'R' (fuselage) and 'L' (tail), which makes it considerably easier to find parts quickly. All laser-cut wooden parts fit together very well. Anyone who has ever built a model aircraft from Aeronaut will find some of the construction stages very familiar.

This is how I work: Once I have examined everything, I separate all the components from the laser-cut boards and sand away all the retaining bars. This took one evening. I keep the empty boards. If necessary, I put individual parts back into the board for identification purposes. I do this especially with small parts.

Contrary to the order described in the assembly instructions, I quickly assembled the tailplane first. This gave me an initial impression of how well the components fit together. So, I covered my small workboard with plastic film, positioned all the milled parts of the horizontal tailplane on it, coated them with white glue, put them together and glued them. I built the vertical tailplane in exactly the same way. It was much quicker and easier than I had thought.

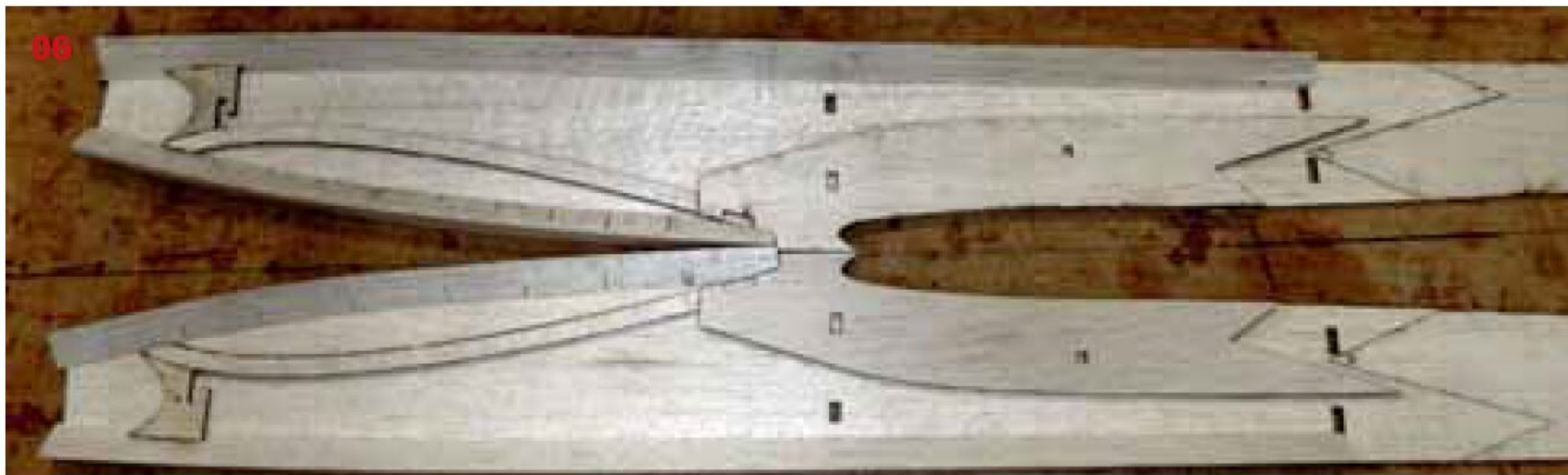
Now it was time to build the wing. Following the assembly instructions, I built the left wing in the sturdy cardboard mould typical for Aeronaut. To do this, I positioned the front lower



planking, with the main and camber spars already glued on, as well as the rear multi-part planking, correctly in the mould, inserted the ribs in their correct order and glued them in place. Next, the root rib was aligned, and the upper main spar, the trailing edge of the aileron cut-out and the leading edge of the aileron were attached and glued. Then everything went very quickly again: the three-part servo frame was glued into the wing and the spigot tube was glued with thickened epoxy resin. Now the leading-edge planking was glued to the ribs at the front with thin instant adhesive and the two-piece root planking was glued to the underside of the ribs. Next, the leading edge and upper planking were adjusted and glued in place, the leading edge was sanded flat with the planking, and the leading edge was glued over the entire surface and sanded to match the profile shape. Now I cut out the aileron from the wing with a fine saw, sanded the protruding remains of the ribs flat, glued on the double-sided tape and sanded it down

at an angle. After finishing the two wing halves, I attached the ailerons to the upper side of the profile with adhesive tape hinges from Pichler.

The fuselage was also constructed using conventional wood construction methods. After joining the two two-piece fuselage sides, I positioned and glued the triangular strips, the wing supports, the rear fuselage reinforcements and the supports for the fuselage cover. Then all the frames and the servo board were placed on the right side of the fuselage, aligned, and both sides of the fuselage and the frames were glued together. It was important to align the sides of the fuselage parallel to the centre and to ensure that there was no warping in the fuselage. A continuous centre line on the building board is a good aid for this. The Bowden cables could then be pulled in and glued to the frames. Four strips were fitted and glued in place as reinforcements (5 x 5 mm).



06 The corner strips, wing supports and supports for the later removable cover were glued to the side parts of the fuselage.

07 The motor bulkhead was positioned with an inserted drill bit and glued in place.

08 The finished front part of the fuselage with the cover and the folding propeller with Z-spinner.

Finally, the fuselage was sanded and the underside of the fuselage was completely planked, while the upper side of the fuselage was only planked in the area of the canopy. To do this, pieces of 3 mm balsa wood were cut to size and glued on with the grain running perpendicular to the direction of flight. Now the excess material on the motor frame could be cut off, sanded down finely and then the deck frame glued on.

Now the canopy was also separated from the fuselage, a small tongue was glued in at the front and a magnetic holder at the rear. A counter holder for the magnet was then attached to the fuselage and the magnet was glued in place with epoxy resin. To do this, I first glue the magnet into the fuselage and cover it with foil or adhesive tape. Then I let the second magnet be attracted to the glued magnet. This ensures that the polarity is correct! Finally, I put some adhesive in the right place in the fuselage cover or the magnet holder and put the cover on. Now the adhesive can dry – done.

Last but not least, I inserted the mounting plate for the wing screw connection into the recesses of the wing cut-out and adjusted it, but did not glue it in place yet. Now the wing halves were put together and carefully aligned on the fuselage. Then I was able to place the drilling template three centimetres from the rear edge to the centre of the wing and drill the two holes in the wing with a 4 mm drill bit through the wing halves into the mounting plate. I then widened the holes in the mounting plate to five millimetres, inserted

two screw-on nuts from below and glued them with epoxy resin. I then attached the rear upper fuselage planking and finished the fuselage ends.

For the elevator and rudder, I used one 'AN-12-MGBBA' servo (23.3 x 12.5 x 25 mm; 10 g) each. These are inexpensive analogue servos with metal gears, ball bearings and more than enough power and fast response time for the model. For the ailerons, I installed one 'AN-8-MGBBD' (23.5 x 8.5 x 24.3 mm; 10 g) each, also with metal gears and ball bearings. The servo fits perfectly into flat high-performance wing profiles. I also followed



Aeronaut's recommendation for the model's drive: 'Actro-n 28-3' motor (28 x 30 mm; 53 g) with 1,300 kv, 'Actrocon 30 A' controller, 9 x 7 inch folding propeller with spinner and a 3s LiPo with 2,200 milliampere hours. The motor turns the propeller at an input voltage of 11.6 volts with a speed of 10,125 revolutions per minute. The input power is therefore 310 watts. That should be plenty of power for my 'Flixx' with its weight of 932 grams.

Now nothing stood in the way of the first launch of this beautiful model! For the maiden flight, I launched the model with half the motor power. That was more than enough to get



Even in its raw state, the 'Flixx' already looked attractive.



Thanks to the tall and stable fuselage, even inexperienced throwers can easily launch it by hand.

FACTS

'Flixx' from Aeronaut

A nimble electric glider

Wingspan: 1,680 mm

Length: 1,200 mm

Weight: 932 g

Wing area: 30 dm²

Wing loading: 31.1 g/dm²

Price: 119 euros

Available from specialist retailers and Aeronaut, www.aeronaut.de.

it into the air quickly and safely. At full motor power, the 'Flixx' became very fast and could be pulled up steeply. No corrections were necessary. This was followed by a few fly-bys for the photographer, a long approach to landing and the 'Flixx' landed right at my feet. My first positive impression: the 'Flixx' flies as it should. It is not a speed model, but it flies very dynamically and quickly. It is also very good-natured in slow flight and can certainly be easily controlled by any pilot with some experience with aileron models.

A few days after the successful maiden flight, I had another opportunity to fly the 'Flixx' in beautiful weather, performing a few loops, extended inverted flights and rapid rolls. That also went perfectly. With the rudder deflections suggested by Aeronaut, the model can be controlled well and precisely. I set 40 per cent exponential for the ailerons. What I particularly enjoy are the fast and low fly-bys, followed by a steep climb at full engine power.

In short, the 'Flixx' is a beautiful, nimble electric model aircraft with good-natured and neutral flight characteristics. With its wingspan of 1,680 millimetres and split wings, the model is also easy to transport and can be quickly assembled at the flying site..

■ Milan Lulić



NEW FUSELAGE, NEW GLIDER

THE 'T-MAX' FROM COMPETITION TOOLS



When Markus Thewes picked up his F3F model 'Mamba' from Competition Tools two years ago, he was shown design studies for a scale fuselage for the wings of the 'Mamba'. Now it's here! Its name: 'T-Max'.

Die Idee eines F3B/F3F-Hochleistungsflügels I was excited by the idea of a high-performance F3B/F3F wing with a realistic fuselage and immediately put myself on the pre-order list. In the winter of 2024/2025, I received the news that the prototype had flown successfully and that series production would start soon. In April, the time had come and I was able to take delivery of my 'T-Max' fuselage.

As I had already experienced with the 'Mamba' and 'Zorca' models, the quality was once again



impeccable. The surface was painted in the mould and the fuselage is highly rigid with additional carbon fibre in the area of the fuselage seam and the T-tail. The black cockpit canopy was supplied ready-mounted on the frame. In

addition to the connection boards for the wing servos, an extended connector for the wings of the Mamba and a CFRP horizontal tailplane were also included in the scope of delivery. If you don't already own a Mamba, you can

models



All wings and fuselages in the 'Mamba' series are compatible with each other.

Torcman with removable propeller. The benefit of the 'FesEx' system is obvious, as it retains the original appearance in glider mode. If the drive is needed in weak conditions or for use on flat terrain, the propeller is simply attached. In good conditions on slopes, however, the 'T-Max' remains visually a pure glider with an electric motor in the nose instead of trim weights. The easy replacement of the propeller with the 'FesEX' system also opens up the possibility of quickly switching between different configurations depending on the intended use. With the 'NT430-20-Z' motor recommended by Torcman, with 14 poles and 18 windings, both a 4s LiPo and, by simply replacing the propeller, a 6s LiPo with optimised power consumption could be used. I decided on the latter option for now.

The first step was to screw the individual parts for assembling the FesEx system together. A ring frame firmly glued into the fuselage holds the actual Y-shaped motor frame, which can then be easily removed later by loosening the fastening screws together with the motor. Then the hole

for the shaft of the 'FesEx' system was drilled in the nose of the fuselage. The hole is slightly oversized so that a positioning aid can be used when assembling the ring and bearing frames. This also creates room for the shaft to move. The locking shaft, which will later hold the propeller mount, was then pushed onto the motor shaft, which was still too long. The corresponding bearing frame supports the entire system, including the ball bearings, in the fuselage nose. The correct position of all bearing parts and the size of the ring frame were then checked by loosely installing the entire unit using the positioning aid. The illustrated installation instructions available for download from Torcman are very helpful. Following the instructions in these guidelines, I was now able to shorten the motor shaft so that the shaft of the propeller unit would find its final position just before the nose of the fuselage when it locks into the locking shaft. The parts could now actually be glued into the fuselage.

As I was still struggling to decide between the 'FesEx' and the conventional FES variant with a

choose from all the wing variants in the Mamba series when ordering the T-Max.

Since I now only had to equip the fuselage, I started by selecting the appropriate drive. Instead of trim weights, I prefer to install a motor, which significantly increases the range of possible applications. With the 'T-Max', I was torn between an FES solution with spinner and folding propeller and the 'FesEX' system from

- 01** The Torcman drive set delivers either 870 watts at 4s LiPo or 1,800 watts at 6s LiPo.
- 02** The 'FesEx' system is aligned with a positioning aid in the opening of the glider nose.
- 03** After aligning the drive, the ring frame and support bearing can be firmly glued into the fuselage.





Both the version with the 'FesEx' system and removable propeller and the version with spinner and propeller positioning were built.

spinner at this point, I left the parts unglued for the time being and continued with the linkage of the ailerons and elevators, because once these were completed, the necessary distribution of the RC components at the front to achieve the centre of gravity would become apparent. In order to avoid the need for trim weights, lightweight yet strong and robust servos were to be used in the tail. After a few comparisons, I chose the KST 'HS08 A', which, despite being only eight millimetres thick and weighing only eleven grams, delivers a force of six kg/cm at 8.4 volts. Thanks to the good accessibility provided by the two servo shafts in the vertical stabiliser, the servos were quickly installed with servo frames. Servo levers and rudder horns as well as threaded rods and clevises from Heizkoffer.de were then used to link the rudders. In the rudder, the rudder horn was selected and installed in such a way that the linkage could disappear completely under the sealing lip, similar to an IDS design. A ball head was glued into the elevator so that the fuselage-side linkage, consisting of an angled steel rod, could be easily mounted on the slope. The steel rod is connected to the servo lever on the other side via a carbon tube of the appropriate diameter, a threaded rod and a clevis.

Now that the fuselage was finished, it was time to go back to selecting the drive variant. Since



most of my flying takes place on slopes with poor or no off-field landing options, I had to be honest with myself that I would hardly ever fly without a drive and almost always with the same configuration. Therefore, the visual advantages of the 'FesEx' system with the propeller removed would simply not outweigh the visual disadvantages with the propeller mounted compared to a spinner variant with propeller positioning. So the final decision was made in favour of an FES variant with spinner and propeller positioning.

After an informative conversation with Torcman boss Klaus Kraft, the motor remained the same, only in the FES variant with a slightly longer conical front of the motor housing. In combination with a 17 x 13 inch CFRP folding propeller, it would be possible to use it both as a launch and sink aid on slopes with 4s LiPo and approx. 870 watts of power, as well as with 6s LiPo and approx. 1,800 watts for fast flying on flat terrain. The set was combined with a 40 mm spinner with a 32 mm blade spacing and the propeller positioning set matching the motor, also from Torcman. The set includes a mount for the magnets for installation on the rear of the motor and a holder for mounting the sensor on the fuselage wall.

Installing the FES drive was then a routine task: the nose was cut off so that there was still some material left for precisely grinding in the spinner-fuselage transition. Then the motor frame, including the motor and spinner, was aligned and fixed in place. Now I could check all the fits and the position of the propeller and finally glue the frame in place. To complete the installation, the standpipe with the sensor holder was



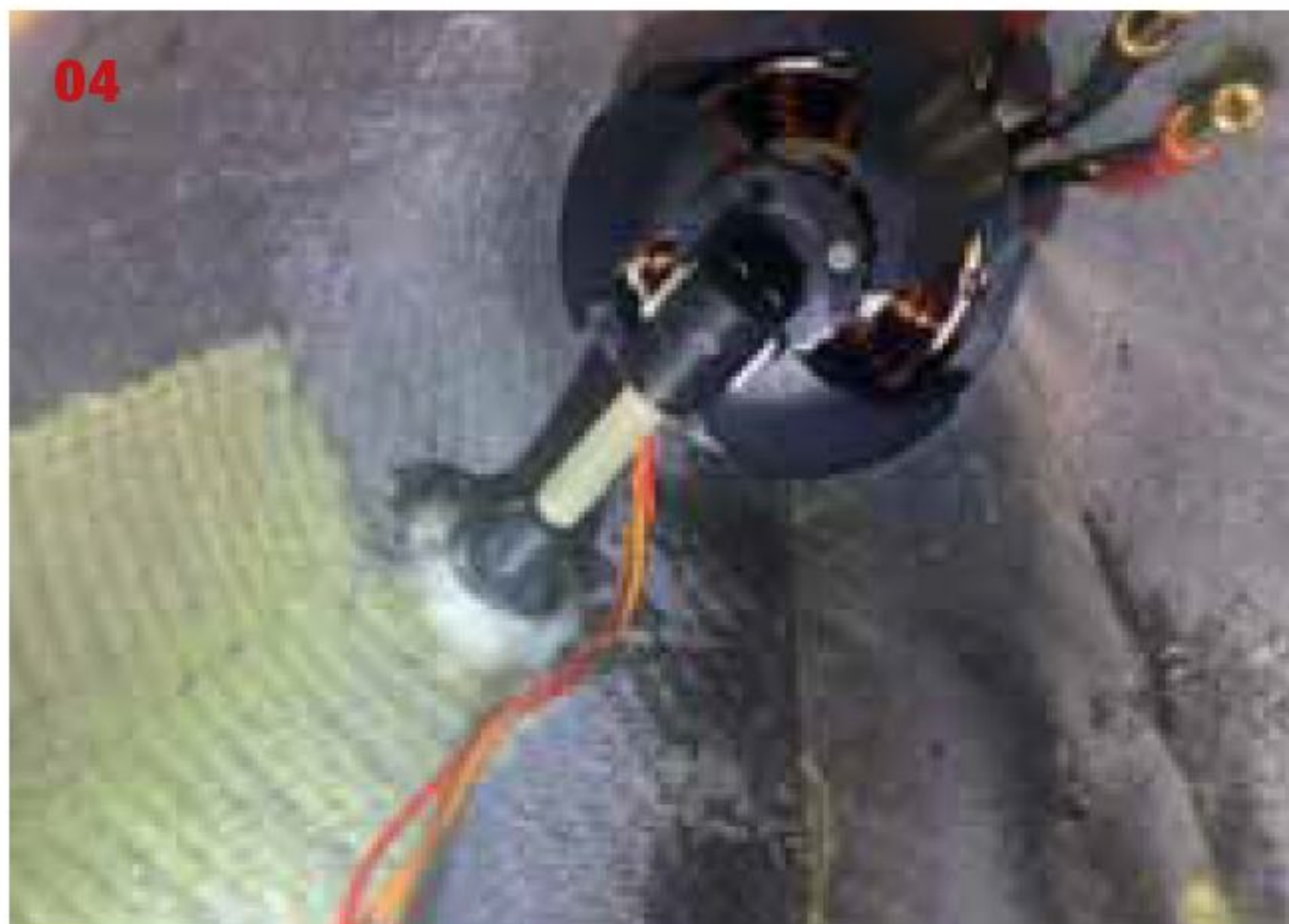
The slight difference in weight between the two drive alternatives is irrelevant when making your selection.



Well protected for the journey to the hillside with matching bags for 'Mamba' and 'T-Max' from Stich & Faden.

aligned with the position of the magnets on the back of the motor and shortened to fit. Now the multi-part holder consisting of the base, standpipe and sensor mount could be assembled and the base glued in place to hold the remaining components.

Before the final positioning of the battery and RC components could begin, the connection cables for the wings in the fuselage had to be completed. The solder boards supplied in the set by Competition Tools were used for this purpose. Thanks to the pin assignment plan for the 'Mamba', all cables were quickly in place and the six-pin multiplex connectors could then be screwed into the receptacles prepared in the fuselage.



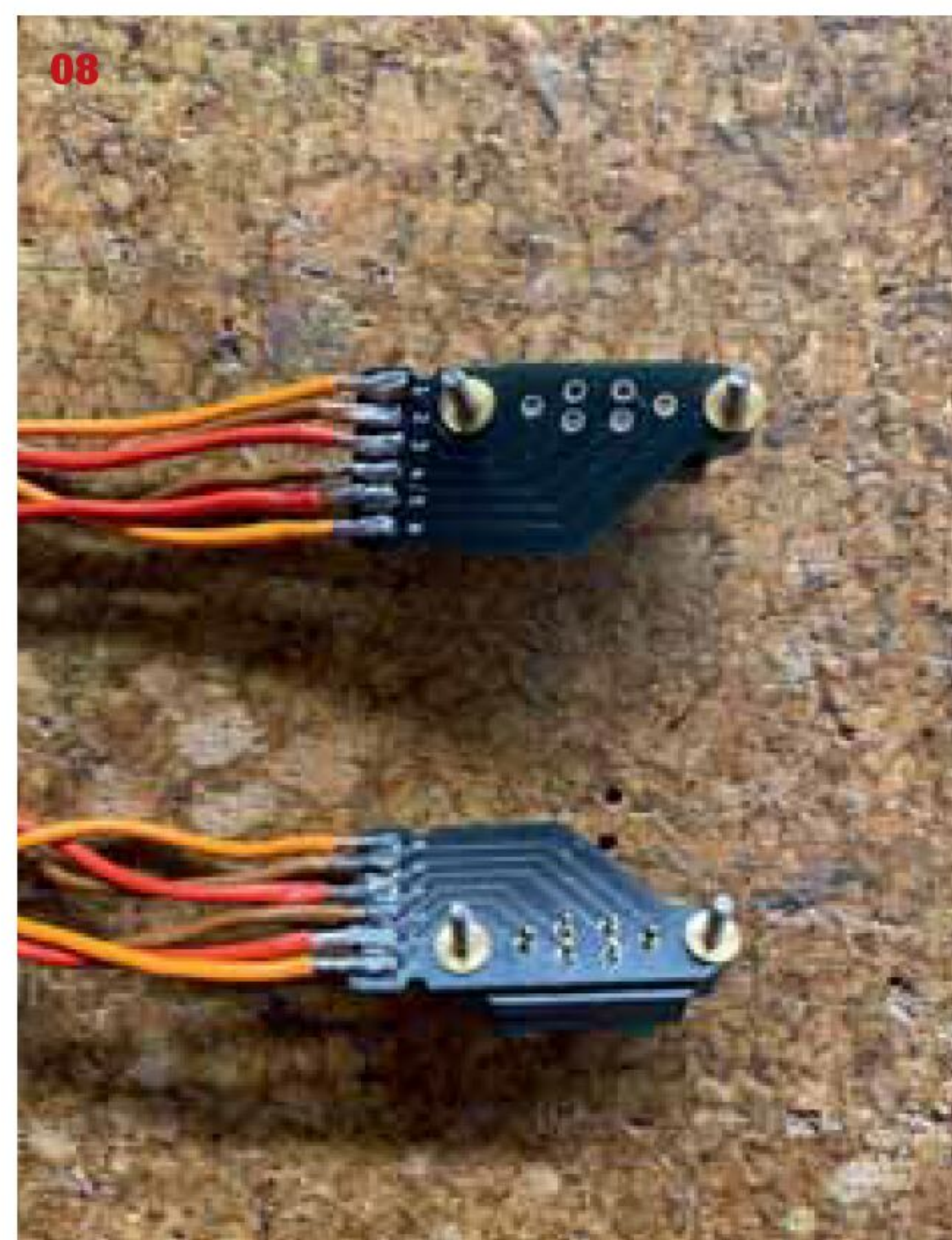
04 The sensor holder for the propeller positioning, which is simply plugged into the base, can be easily removed if necessary.

05 The lightweight and powerful KST 'HS08' servos are used in the tail unit.

06 The play-free linkages come from the Heizkoffer.de range.

07 The 'Akku-Fix' system from Torcman allows precise positioning of the drive battery, even in hard-to-reach places.

08 The connection boards with six-pin plugs supplied with the 'T-Max' simplify the creation of the wiring harness for the wing connections.



The cockpit canopy lock also had to be installed. A system from Gromotec was used here, which holds the canopy in place with a spring-loaded pin. It is unlocked via a Bowden cable, which has its exit point with a small handle below the connecting rib on the fuselage and thus remains almost invisible. The guide for the spring pin in the canopy and the front split pin were glued into the finished canopy. Admittedly, it would have been easier if the canopy had not yet been glued to the frame. So I had to drill two holes next to the rear guide sleeve and the front pin in order to apply thickened epoxy resin to reinforce the cockpit canopy.

Now it was time to put it on the centre of gravity scale for the first time to see where the weight of the controller, receiver and, above all, the battery would be best placed. It turned out that the 'T-Max' could have handled a little more weight in the rear, which would have made it possible to use the larger KST 'X10 Mini

Pro' servos, for example. On the other hand, this made it possible to position the flight battery in the centre of gravity and achieve a centre of gravity 105 millimetres behind the leading edge with only the controller and RC components. This, in turn, was perfect for the planned option of switching between 4s and

6s battery packs without having to readjust the centre of gravity each time.

In order to be able to position the respective battery as far back in the fuselage as possible, easily and accurately in the centre of gravity, I used Torcman's 'Battery Fix' system. This sys-

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FACTS

The 'T-Max' from Competition Tools

A model-like all-rounder

Wingspans:

'Mamba': 2,908 mm

'Mamba GT': 2,935 mm

'Mamba S': 2,933 mm

Length: 1,615 mm

Weights: 3,800 g

Wing area:

'Mamba': 62.52 dm²

'Mamba GT': 62.63 dm²

'Mamba S': 62.23 dm²

Wing loadings:

'Mamba': 60.78 g/dm²

'Mamba GT': 60.67 g/dm²

'Mamba S': 61.06 g/dm²

Price (with wing): . .from 2,499 euros

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phone: +49-1512/969 80 36,
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tem uses firmly glued brackets and a base plate screwed onto them to determine the position of the battery. The battery itself is mounted and fixed in place with pinpoint accuracy using a carrier plate with a ball latch bolt. Two screws on the fuselage mounts and two slotted holes on the base plate allow it to be moved even after installation, so that the centre of gravity can be adjusted retrospectively if necessary. This was the perfect solution for this application, and installation was quick and easy.

Now the controller was given its place on the side of the fuselage, the receiver and GPS logger were mounted in the middle on a small support board, and after laying the cables, the fuselage assembly was complete. The programming in the transmitter was simply taken over from the 'Mamba'. All that had to be done was to switch from V-tail to T-tail. I had programmed the propeller positioning directly in the controller in advance, so that this was also already working.

I didn't expect any big surprises on my maiden flight on my local hill, as the wings of the 'Mamba' had already proven their capabilities. The Torcman motor in the 4s configuration pulled the 'T-Max' up to altitude without any great effort. The wind was quite gusty and interspersed with turbulent thermals. Although it was almost perfectly positioned on the slope, it didn't really want to carry. However, the T-Max's final weight of 3.8 kilograms brought a lot of calm to the maiden flight despite the turbulent conditions, and the model confidently made its way up the slope. Due to the moderate lift, I quickly noticed that the model needed its speed to stay up due to its weight. However, this also demonstrated the outstanding characteristics

The 'T-Max' was shown to the public for the first time in action at the 2025 gliding exhibition.



of the 'Mamba' wings, which cope well with ballast even in weak conditions. So, for me, the 'T-Max' felt like a 'Mamba' with ballast. After the usual tests, such as the downward flight path, the effect of the butterfly and the stall behaviour, all that was needed was a correction of the elevator mix to the butterfly and a significant increase in the exponential on the elevator. Here, I also had to reduce the deflection mechanically later on to make the response more sensitive.

After a few familiarisation rounds, I really started to enjoy flying the T-Max. Thanks to its slightly higher weight, the model flew confidently along the edge of the slope and had plenty of power. But even in phases when the wind died down and it was time to fly in the thermals, the model showed no weakness. With the appropriate base speed, I was able to quickly climb to over 400 metres in very tight thermals and reduce the altitude with aerobatic fast flyovers. At some point, however, it was time for the first landing. Approaching in a wide arc, the 'T-Max' confidently passed through the

pronounced lee wave in front of the landing field at its now familiar speed and then quickly reduced its speed to a landing speed with a butterfly manoeuvre. As already known from the 'Mamba', the 'T-Max' also remained completely uncritical in slow flight and hovered in a constant descent, purposefully heading for the landing field. With a soft landing, the maiden flight came to a successful conclusion.

A few weeks later, the 'T-Max' proved that it also performs well on flat terrain at the gliding fair in Schwabmünchen. In Torcman's flight slot, the built-in drive – again in the 4s configuration – showed that it can be launched safely and easily by hand, even in calm conditions.

I am already looking forward to many more flights with the 'T-Max' on the slope and I am sure it will get a lot of flying time in the coming autumn days. And maybe I'll treat myself to a second set of wings for Christmas, this time with the even more dynamic 'Mamba-GT' profile.

Markus Thewes

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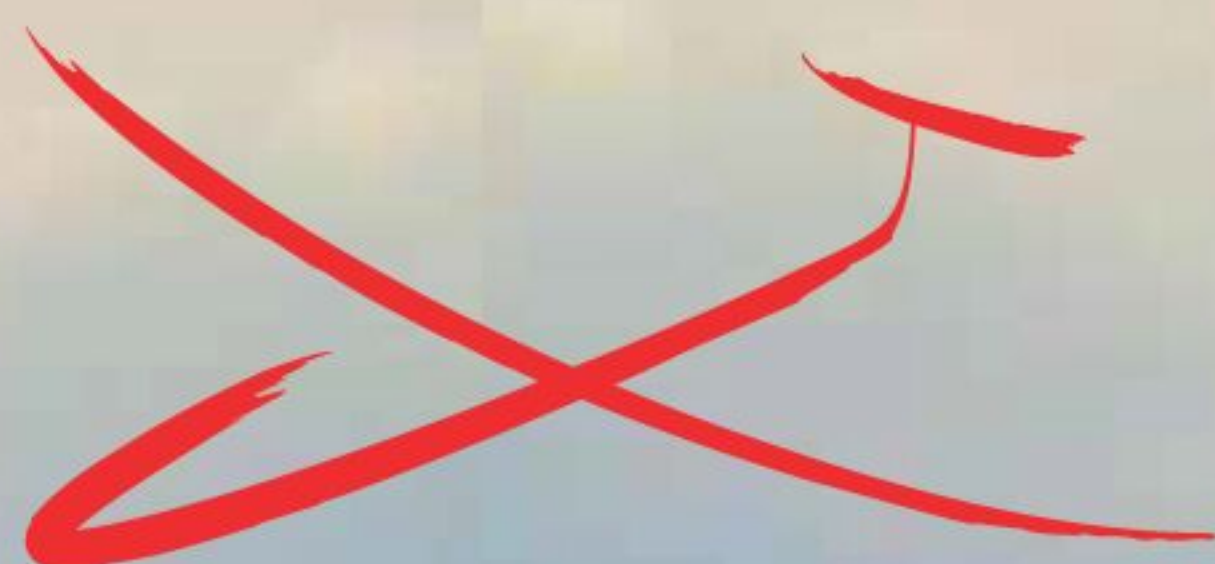
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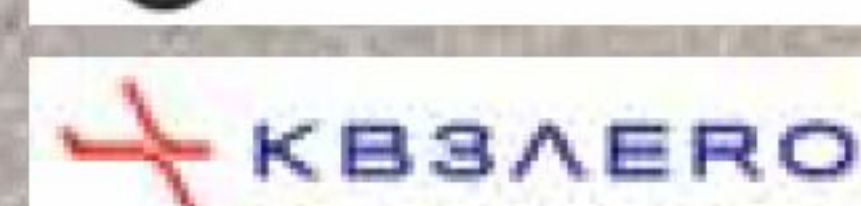
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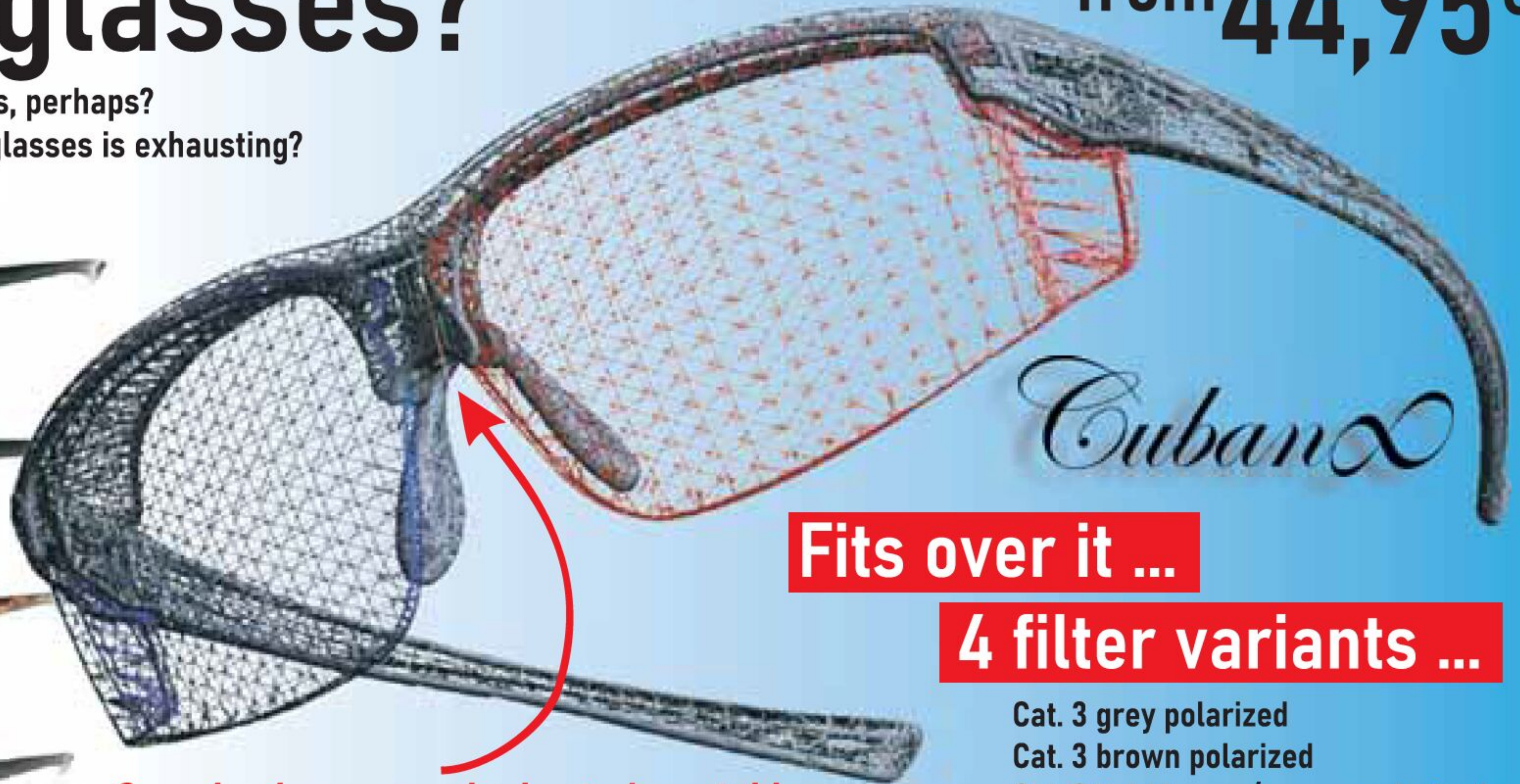
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FACTS

'Vortex 4' from DS-Composites
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Wing loading: 12.6 dm²
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F3K FOR EVERYONE

THE 'VORTEX 4' FROM DS-COMPOSITES



The 'Vortex 4' is a typical representative of F3K competition models and, thanks to its versatility, is also suitable for everyone.

The 'Vortex' models from Denis Skrabl and DS Composites in Slovenia are very popular. The latest model, the 'Vortex 5', was already used at the last F3K World Championships. Thorsten Rauber took a closer look at its predecessor.

With the 'Vortex 4', DS Composites offers a state-of-the-art model for F3K sport. Thanks to its two-piece wing and four flaps, it is very versatile. Ordering from Denis Skrabl was super easy and pleasant. With the four-flap wing, I hoped for fine control of the camber, which should give the model additional flexibility in different flight conditions.

The amount of work required to expand the 'Vortex 4' was kept to a minimum. All I had to do was lay the cables for the aileron servos in the wings and complete the plug connections for the two wing halves. The camber flaps are

Dynamic gliding, for example on a slope, is also great fun with this model.



hinged from the fuselage. The rudder horns for the special camber flap hinges were already factory-fitted. Six 'LV06' servos from CHA-Servo were used. Weighing just 6.1 grams, it is the perfect servo for this model. It can be powered directly from a 1s LiPo battery. This combination results in a lightweight but reliable setup. With a centre of gravity of 70 millimetres, the take-off weight was a sensational 243 grams.

It was already time for the maiden flight. To avoid any surprises, I decided not to use the catapult launch and started with a classic javelin throw. The Vortex 4 flew straight ahead with ease and did exactly what I expected. So I was able to venture my first discus throw. Even on this first launch, I could feel the high agility



Four of the six servos are in the fuselage. At the very front are the servos for the tail-plane, directly behind them are the servos for the flaps.

of the 'Vortex 4'. The precise control and fine handling allowed me to catapult the model into the air with ease. I was quite satisfied with an initial height of around 45 metres.

The conditions were not ideal that day. The thermals were barely noticeable, weak and fleeting. But this is exactly where the Vortex 4 showed its strength: Thanks to the four-flap wing, I was able to take advantage of even the smallest updrafts and thermal. As with all my models, I also used dynamic camber on the 'Vortex 4'. I operate this via a control stick, allowing me to set the appropriate camber for every situation. I was fascinated by how sensitively the model responded to even the slightest lift signals. The Vortex 4 immediately indicated even the slightest changes in the air, allowing me to react immediately and circle around. But it wasn't just the thermal flights that impressed me. I was also surprised by the more dynamic flying. There were repeated gusts of wind on this maiden flight day, but they couldn't prevent the lightweight model from flying the course. This is proof of how aerodynamically sophistica-



Landings directly into the hand are quick and easy after just a little practice.

INFO

The Vortex 3 was presented in AUFWIND 3/2022. The magazine can be reordered from the AUFWIND shop.

www.aufwind-shop.de



ted the design is. The combination of manoeuvrability and precision makes the Vortex 4 a really fun model to fly. The 'LV06' servos from CHA-Servo, which were developed especially for these models, also contribute to this. Finally, for landing, the flaps were fully extended and the ailerons were slightly deflected. This allows the model to land slowly and precisely.

At the end of this first day of flying, I was very impressed with the Vortex 4. The model has everything I could want from an F3K model. The model is certainly not only suitable for competition pilots, but also for anyone who just wants to have fun flying. Its flight characteristics make the 'Vortex 4' an all-rounder. The model comes highly recommended. ■

Thorsten Rauber

The large flaps are extremely effective. They allow the wing to be cambered very effectively.



SUMMER FUN

ON LAND AND ON WATER



Olaf Ketelsen had been searching for a long time for a high-wing aircraft that would be equally suitable for aerobatics, land and water flying. Piper, Cessna or Beaver were out of the question for him. He found what he was looking for in the 'Muscle Coupe' with a wingspan of 183 centimetres.

It was love at first sight. I like the design of aircraft from the 1930s. I also like the beefy radial engines of these aircraft. The Extreme Flight/Legacy Aviation model of the 'Muscle Coupe' is also just the right size for me and fits nicely in my car. The model is based on the American two-seater 'Monocoupe', which was also flown in air races, among other things. A later version was built with a 110 hp radial engine and shortened wings. The Extreme Flight model is most closely based on a 'Monocoupe 90'. It was difficult to find another copy of the ARF model. I finally found one at a dealer in Greece and a pair of suitable floats came from the Czech Republic.

For the drive, I chose a powerful Hacker 'A50-16S' motor with 365 kv to match my existing 6s LiPo packs. This should have enough power to fly at three-quarters motor power and thus increase the flight time – but more on that later.

I was impressed by the high quality of the components. In addition to the well-packaged individual parts, a protective and transport bag for the wing halves was also included. The entire wooden structure was cleanly glued and well-constructed. All components were very light and manufactured with a high degree of stability. The covering had no creases and was ironed on precisely despite the challenging design. I only added a black decorative strip to the colour edges between white and red. This emphasises the beautiful design even more.

The assembly of the model was very well described in the English and well-illustrated

instructions. For the experienced modeller, the instructions are more or less just a reference guide. Even the small individual parts were labelled and packed separately in small bags. From the small lock nut to the push rod and the fork and ball heads, everything was complete and of high quality. I was very pleased that even ball heads for play-free rudder linkages were included. I glued the rudder hinges into the precisely fitting slots with a little superglue. The GRP rudder horns were glued into the prepared slots with slightly thickened epoxy resin. I also used epoxy resin for the vertical stabiliser and horizontal stabiliser. The fin was glued in place after the tailplane had been fitted. It is guided through a CFRP tube and is therefore also perpendicular to the tailplane and fuselage. I also sealed the minimal gap in the tailplane with a little silicone adhesive so that no splash water can penetrate the wood later when taking off and landing on a lake.

models



The rest of the model's construction was limited to installing the servos, the drive with controller and the receiver. I still had the servos from another model, which had already proven themselves. They can be loaded with a maximum of 5 kilograms and, with dimensions of 35 x 18 millimetres, fit perfectly into the recesses in the model. A total of six servos of this class are required to control all the rudders and flaps. As everything was very well pre-fabricated for the installation of the electronics, the work was limited to soldering a plug to connect the two servos on each wing half to the fuselage. For this, I again used the practical Multiplex plugs with solder boards from Hacker.

The wing connection itself consists of a CFRP tube that fits snugly into the fuselage and wings. The elevator servo was placed under the tailplane and the rudder servo in the fuselage. The latter was connected to the rudder with a standard 2 mm steel wire in a neatly laid Bowden cable tube. Before inserting the wire, I sprayed some silicone spray into the tube. This allows it to slide almost without friction.

The motor fit exactly into the bolt circle of the motor mount in the model with the aluminium cross brace supplied. It was then screwed directly onto the GRP-reinforced motor mount. The cap nuts were also already glued into the model. The 63-millimetre length of the Hacker motor was also ideal. The propeller hub protrudes about ten millimetres from the dummy motor. It was glued to the beautifully painted bonnet. I always use Pattex silicone adhesive for this. To make the dummy motor look a little more realistic, I stuck strips of aluminium tape onto the push rods. That looked much better. I then cut two ventilation holes between the two lower cylinders to ensure that the motor and controller are sufficiently cooled. Since I wanted to use a slightly larger propeller (Fiala-E 17 x 12 inches), Hacker recommended that I pay attention to cooling.



- 01** The construction and quality are perfect. The fuselage offers enough space for a variety of power units.
- 02** The pair of floats was found at a dealer in the Czech Republic.
- 03** One of the floats contains the rudder servo for manoeuvring on the water.



FACTS

‘Muscle Coupe’ from Extreme Flight

An electric seaplane model

Wingspan: 1,828 mm

Length: 1,327 mm

Weights

Land version: 3,500 g

With floats: 4,250 g

I therefore installed a telemetry temperature sensor. This way, I automatically receive a warning if the temperature exceeds 70 degrees. The electrical power of the drive should now be 1,400 watts, or 400 watts per kilogram. When operating as a seaplane, a little more power might not be a bad thing, especially since the entire aircraft weighs a good 500 grams more with floats. I installed the Hobbywing controller (100 A) below the battery. This way, it is exposed to the airflow and gets sufficient cooling. The removable cockpit canopy is closed with a spring-loaded latch. The latch was already glued into the model and works perfectly.

Then I screwed the axles, tyres and wheel spats onto the CFRP landing gear. I had previously replaced the foam tyres with Kavan air-tyres. They provide good cushioning and make it easier to maintain the track. The landing gear legs were easy to screw on from below the model using the hexagon screws provided. The tail wheel was screwed to the fuselage with two wood screws and connected to the rudder with a screw. The seaplane version does not have a tail wheel and instead has a fin that is glued underneath, but since I want to have a hybrid aircraft, I’m keeping the tail wheel. Two rudders were provided on the floats for control anyway. Once the receiver and the flight battery with a capacity of five ampere hours had been instal-

led, the rudder deflections could be programmed according to the instructions. The centre of gravity was also correct in this configuration.

Now for the floats. The GRP components were delivered in excellent quality. Here, too, I glued on additional black decorative strips. Then I installed a waterproof servo with about two kilograms/centimetre of actuating force and routed the cable to the rear struts to a plug contact on the model. This allows me to easily

replace the floats with the landing gear legs. In the fuselage, I provided a V-cable for the rudder and the floats’ rudders. The floats’ second rudder is connected to the powered rudder via a rod. The robust stainless-steel rudders and mountings were also very nicely made. They can be folded up with a spring when driving over flotsam, grass or on the beach. In addition, the floats have a concave shape on the underside so that splash water is diverted outwards, and a ten-millimetre step so that the floats do not stick to the water. I had no experience with flying over water and was very curious to see how the model would take off and land.

The model was quick to assemble at the airfield: attach the wings, connect all the cables and mount the struts. An M3 screw is also used to secure the wings. I glued on some heat-shrink tubing to make it easier to screw in. This allows you to place the screw on the spanner and screw it into the model without the risk of it accidentally falling into the fuselage. First, I trimmed the model on the ground and rolled it up and down the runway a little until it was running straight. Then I set the flaps to half and slowly increased the engine power. The lightweight model quickly lifted its tail and took off. I only had to trim it a little. For the second flap position for landing, I added about 24 per cent elevator. With the flaps retracted, the ‘Muscle Coupe’ flew quickly and safely through all the aerobatic manoeuvres. Knife-edge flying, Cuban eights, turns, loops, inverted flight and rolls...

The flight image is inspiring and reminiscent of the pioneers of aviation in the 1930s. ►



The maiden flight with the landing gear took place at the Model Flying Ranch in Spain.

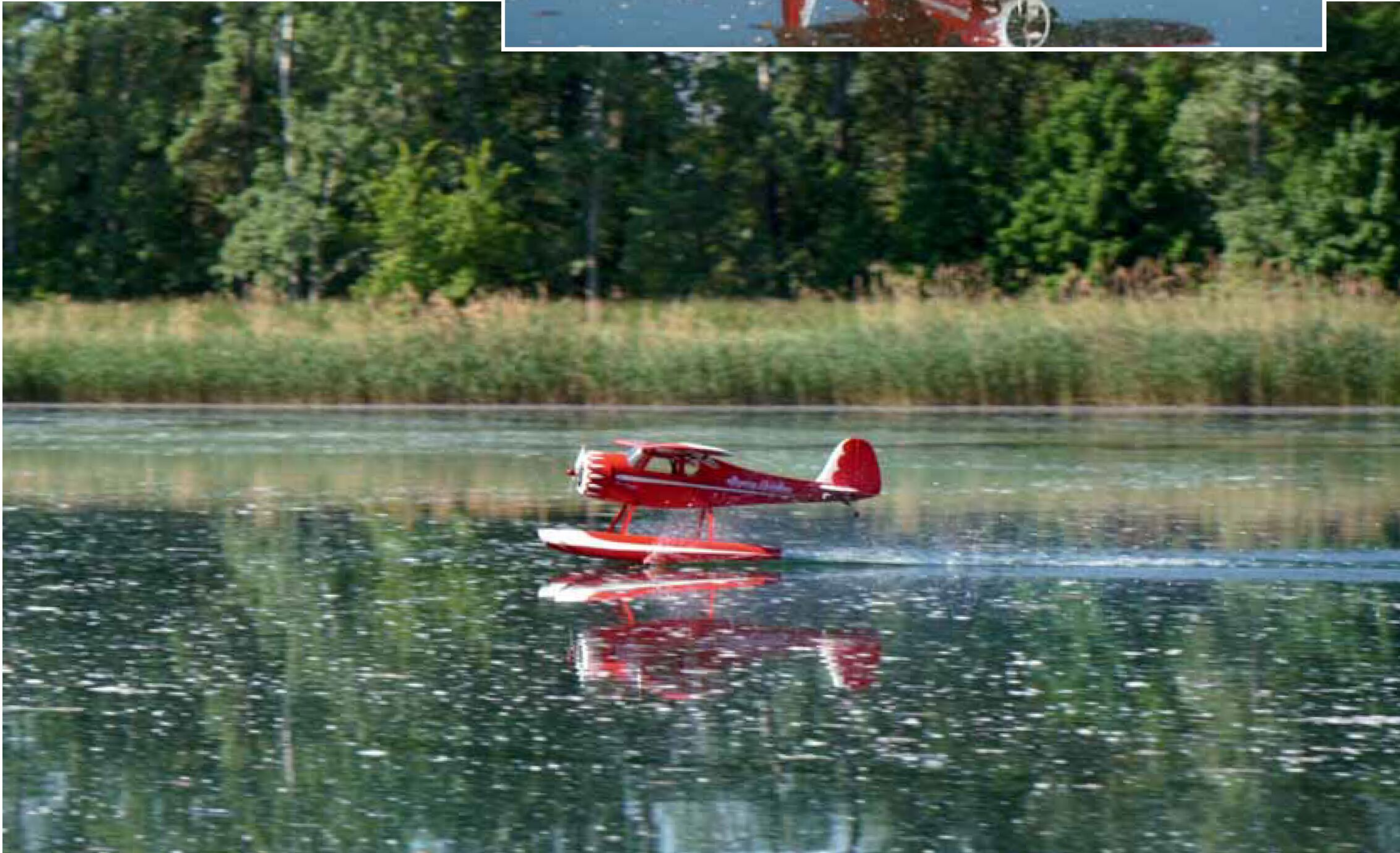


none of this was a problem. To land, you have to guide the model with low engine power until it is just above the ground. Then catch it, hover and let it sit down. This happens quickly due to the relatively short wings. As soon as the tail is on the ground, pull back slowly so that the model does not run the risk of going nose down.

Next discipline, flying over water: Once the floats were fitted and the model was travelling straight ahead during the take-off run, nothing stood in the way of my first flight over water. I slowly increased the engine power so that the model could glide out of displacement mode. You can give the model a little time and accelerate slowly. Otherwise, the propeller may suck in too much spray. In my case, a smaller propeller (16 x 10 inches) might be better so that the propeller circle does not get hit by the water displaced by the floats. After accelerating for just under 30 metres, the model began to glide with the flap's half down. I increased the engine power to

Flying on water is fun and exerts a tremendous fascination. ►

Taking off from the water is easy if you slowly increase the engine power and give the model time for the floats to start gliding. ▼



The flight behaviour with the floats differs only slightly from the version with the wheeled landing gear.



INFO

The model is currently no longer part of Extreme Flight's regular product range. However, individual retailers may still have stock. An international overview of retailers and importers is listed on the website www.extremeflightrc.com.

about 50 per cent and the 'Muscle Coupe' was already in the air. In terms of flight characteristics, the model behaved similarly to the land landing gear. I had to use the rudder a little more during aerobatics – but otherwise everything was the same. The landing approach was again carried out with the landing flaps set and a little engine power to about ten centimetres above the water surface. Then the engine was switched off completely and the elevator was pulled slightly. The model landed gently on the floats, planed a short distance and then sank.

I was thrilled by the successful flying days on land and water. This beautiful model covers a wide speed range, is a visual treat and allows me to expand my flying skills and horizons in terms of flying over water. In short: easy to fly for experienced pilots and suitable for seaplane beginners if they can land the land version on a short-cut or asphalt runway. ■

Olaf Ketelsen

The 'Muscle Coupe' with a wingspan of 1.83 metres has proven to be an electric motor model suitable for everyday use.



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Preview

The 'Duo Discus' with a wingspan of 2.5 metres from Modellbau Pollack and TUN-Modellbau is a handy full GRP glider model with impressive flight performance. Philipp Gardemin has a lot of fun with the model and reports in detail.

Dr Andreas Gawron has already reported in detail on the development of the 'Sufit' flying wing, which is just under 2.8 metres in size, in AUFWIND. He has now built and flown the first model. This much can be revealed today: the model has lived up to expectations.

The 'K-8b' is popular in the gliding scene. The small manufacturer Rhöner Überflieger (Germany) offers a kit for a 1:3 scale model with a wingspan of five metres. Walter Hametner built the glider.

The F3K scene can look back on two impressive events with international participation: the World Championships in Tarp and the successful Brezn' Cup near Munich. Herbert Locklair and Tobias Schua were there for AUFWIND.

Clemens Strausky also reports on the Braunsberg slope flying area in Austria, Mark Titz takes a look at the 5.14-metre 'JS-3' from Chocofly, and Tobias Schua builds the 'Vrace' from Mahmoudi Modellsport. And much more.

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